THE Journal OF THE

AMERICAN DENTAL ASSOCIATION

NOVEMBER 1, 1947 • VOLUME 35 • NUMBER 9

CONTENTS

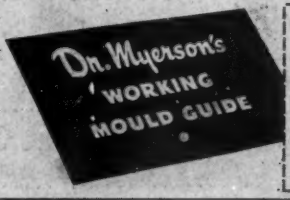
Oral Surgery in General Practice.....*Dingman*....607
Penicillin and Vincent's Infection.....*Ziskin*....627
Partial Denture Prosthesis for War Injuries...*Emory*....634
New Methods for Use of Penicillin.....*Scrivener*....644
Editorials.....648
Minutes of House of Delegates.....651
News of Dentistry.....657
Council on Dental Health.....665
Council on Dental Education.....668
Committee on Legislation.....674
Council on Dental Therapeutics.....677
Book Reviews.....678
Current Literature.....684
Army Dental Corps Separations.....688
Navy Dental Corps Separations.....689
Deaths.....691
Directory.....692
Announcements.....694

Myerson's Working Mould Guide "PRAISED"

COMPETITOR REFERS TO IT AS "COSTLY WORKABLE ASSORTMENT" AND "EXPENSIVE COLLECTION OF POPULAR TEETH".

***THE FACTS*— 1.** Myerson's Working Mould Guide gives you $126.00 worth of the finest *useable* teeth for $105.00. You save $21.00. **2.** You don't waste a cent. **3.** You get a handsome, functional package containing 42 sets of beautiful teeth that you can proudly show to your patient, while selecting the actual teeth to be used for the case. **4.** Thousands of dentists have bought the Myerson Working Mould Guide and find it a great aid to their denture practice. **5.** It has been highly praised by prominent prosthetic men and by schools and other institutions. **6.** You do not have to spend $25.00 for a large collection of unusable black-pin teeth! You can save $21.00 and you will save time and disappointment as well.

SEEING IS BELIEVING . . . LET US SHOW YOU!



MYERSON TOOTH CORPORATION
90 Hamilton Street, Cambridge 39, Mass.

Please ship me_____Working Mould Guides ☐
Please have your representative call..... ☐

Dr.

Street

City State

The Journal of the American Dental Association, Vol. 35, No. 9. Published by the American Dental Association, 212 E. Superior St., Chicago 11, Ill. Yearly subscription $7.00 for U. S. and possessions; $8.00 for foreign countries. Single copy forty cents. Entered as second-class matter, May 27, 1942, at the postoffice at Chicago, Ill., under the act of August 24, 1942. Published semimonthly. Copyright 1947 by the American Dental Association. The Journal of the American Dental Association is indexed in the Index to Dental Literature and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts and Chemical Abstracts.

THE Journal OF THE
AMERICAN DENTAL ASSOCIATION

NOVEMBER 1, 1947 • VOLUME 35 • NUMBER 9

ORAL SURGERY IN GENERAL PRACTICE

Reed O. Dingman,* M.D., D.D.S., and James R. Hayward,† D.D.S., M.S., Ann Arbor, Mich.

THE surgical phase of general dental practice may vary from the occasional removal of a loose deciduous tooth by some dentists to the execution of the more advanced surgical procedures on the mouth and jaws by others. To the majority of practitioners, however, the term oral surgery as applied to the practice of general dentistry is limited to include: (1) the extraction of teeth and preparation of the alveolar ridges for the reception of prosthetic restorations; (2) the management of acute infectious processes directly associated with the teeth; (3) alveolectomy; (4) root resection; (5) the occasional uncomplicated removal of a partially impacted tooth, and (6) the preoperative and postoperative management incident to the care of patients who require these types of treatment.

Successful management of minor oral surgical problems presupposes steadfast and slavish adherence to the principles of hemostasis, asepsis and anesthesia as well as a knowledge of anatomy, pathology and physiology of oral tissues. An accurate diagnosis and clinical evaluation of the problem is imperative before the dentist undertakes any surgical procedure. In addition to the factors mentioned, surgical and technical ability play an important role in the successful conclusion of a case.

Anesthesia

The operator should make the choice between local or general anesthesia, depending on the problem at hand, the general physical condition of the patient and the facilities available for administration of the anesthetic agent. General anesthetics in the hands of expert anesthetists are believed to be as safe as local anesthetic agents; but, because of limitations in ability to administer general anesthetic agents, lack of proper equipment and the inconvenience of postoperative care of the patient, most operators

Read at the general assembly of the eighty-first midwinter meeting of the Chicago Dental Society, February 11-14, 1946, and at the annual meeting of the Alabama State Dental Society, April 10-13, 1946.

*Associate professor of oral surgery, School of Dentistry, University of Michigan, and oral and maxillofacial surgeon to the University Hospital, University of Michigan, Ann Arbor.

†Assistant resident in the Department of Oral Surgery, University Hospital, University of Michigan, Ann Arbor.

in general practice will choose to operate with the patient under local anesthesia. It is possible to carry out any minor surgical procedure in and about the mouth with the aid of local anesthesia. Regardless of the agent used, it must be nontoxic, safe and easily administered, and must produce profound anesthesia for a sufficient length of time to permit accomplishment of the procedure with a maximum of comfort to the patient and convenience to the surgeon. The operator should master the technic of administration of the type of anesthetic best suited to his practice so that it can be given with dispatch and skill, and to a depth sufficient to produce insensitivity at the operative site. Failures in general practice frequently are caused by incomplete anesthesia resulting in anxiety, restlessness and lack of cooperation on the part of the patient, and nervousness and haste on the part of the surgeon who may not carry the procedure to a successful conclusion.

Premedication

Apprehensive, nervous patients may be put at ease and rendered partially insensible to pain by the preoperative use of drugs. Premedication makes many patients receptive to surgical procedures that otherwise might be impossible to approach without general anesthesia. Premedication with barbiturate derivatives also decreases the incidence and severity of toxic reactions to local anesthetic agents.

If the procedure is not urgent the apprehensive patient should be given an early morning appointment at a future date. The night before the operation the patient is given pentobarbital sodium grains 1½ by mouth at bedtime. The next morning the patient arrives at the office early, the same dose is given forty-five minutes before the operation and the patient is permitted to rest quietly until the operation is undertaken.

If the operation must be performed at the date of initial examination, Seconal sodium grains 1½ may be given in the office thirty minutes before the operation. This drug acts more quickly and is more quickly eliminated than pentobarbital sodium.

For the more sturdy patients Nembutal or Seconal grains 3 and morphine grain ¼ may be necessary before adequate sedation is obtained.

No premedicated patient should be permitted to travel unattended and under no circumstance should he be allowed to drive a car, because the reflexes are slowed considerably and accidents may result.

Asepsis

Another fundamental factor that must be considered is asepsis. A practical technic of asepsis should be worked out in every office for the preparation and use of hypodermic needles, knives, suture needles, tissue forceps and any other instruments coming into contact with underlying tissues. Serious deep infections frequently occur after operations on the mouth, owing to transfer of bacteria into deep structures by contaminated instruments and hypodermic needles. Sharp instruments and needles used on soft tissues should be sterilized immediately before operation. Others may be sterilized immediately after use and kept clean. If not used in a few days they should be resterilized before use.

The operator's nails should be trimmed and his hands scrubbed before an operation, and if possible he should wear rubber gloves as a hygienic measure for the patient and protection for himself. Establishment of asepsis should be a reflexive action for all personnel of the office. Habits of good technic may prevent serious postoperative complications that might endanger the life of the patient and be a source of great embarrassment to the dentist.

Hemostasis

Ineffective methods for the control of bleeding at the operative site may contribute to failure of an operation that easily might have been a success if a few simple principles of hemorrhage control had been mastered. In most cases the field can be kept clear by sponging with small gauze sponges. Loose cotton should not be used, as shreds of it may catch on the bone and be left behind to act as foreign bodies, resulting in delayed healing. The epinephrine or other vasoconstricting agents in the anesthetic solution help to minimize the bleeding, especially if infiltration anesthesia has been used. If block anesthesia has been used and excessive bleeding is anticipated, the local region should be well infiltrated with a procaine-epinephrine solution several minutes before the operation is begun. This guarantees a relatively dry field.

Every dentist performing operations should invest in a suction apparatus. An inexpensive water suction apparatus is available and can be used as a temporary attachment or may be permanently installed in the water system (Fig. 1). Water suction involves no moving parts to wear or get out of adjustment, and its operation is practically noiseless. Portable motor units are available but are both expensive and noisy. Suction apparatus is invaluable in certain situations and may permit completion of procedures otherwise impossible to accomplish. Vision of the operative field must be unobstructed at all times or failure is probable in difficult cases.

Light

The usual method of illumination for operative dentistry often is inadequate for good vision in oral surgery. A comfortable headlight is essential for uniformly acceptable results, and in some situations a small oral lamp, as well, directed by an assistant is helpful. The

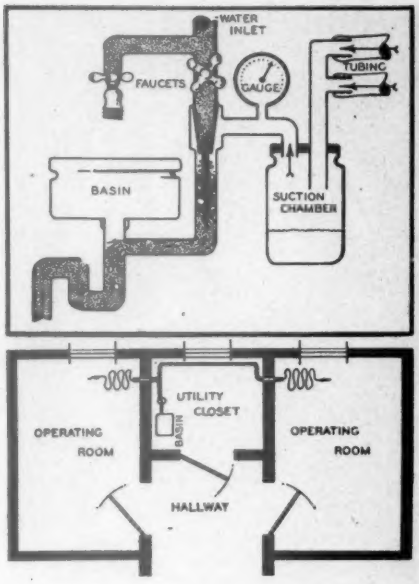


Fig. 1.—Above: Diagram of permanent installation of inexpensive, readily available water suction apparatus. Below: Installation of suction equipment in adjacent utility room conceals apparatus and makes it available for one or more operating rooms

head lamp that permits axial vision along the beam of light is most useful in searching the depths of operative regions (Fig. 2). Equipment of this type is readily available and should be included in the armamentarium of all operators.

Access to the Operative Field

Another cardinal factor pointing to success in minor oral surgery is adequate access to the operative field. In the practice of a specialty patients are seen who have been handled unsuccessfully in the office of a general practitioner simply because the dentist was unable to visualize the operative field owing to inadequate access. Management of most of these cases becomes simple when the patient is reanesthetized, bleeding is controlled, a flap is prepared and the region is viewed with a good light. The procedure

Fig. 2.—Headlight that provides axial vision is best source of light for illumination of small operative fields

might well have been accomplished as easily by the general practitioner if he had mastered these few surgical fundamentals.

Flaps

Most dentists are reluctant to prepare soft tissue flaps, or, if a flap is prepared, it is too small or poorly planned. There is no necessity for timidity, because, with the possible exception of the lingual tissues in the mandibular third molar area or in the posterior part of the palate, there are no large vitally important structures about the alveolar ridges that present difficulty in the preparation of mucous membrane flaps. Incisions are seldom made in these regions, so discussion of the surgical danger is irrelevant. Generally, incisions are short and the flaps prepared are so small that they fail to give good access.

A mucoperiosteal flap should be prepared whenever it will aid in permitting vision of the operative field. Flaps should be prepared also whenever removal of bone is necessary or if soft tissue might be injured in carrying out instrumentation on the teeth or bone. The principles of flap design are: (1) sufficient size to permit access to the operative field, with a base at least as wide as its free margin; (2) avoidance of sharp acute angles on flap margins; (3) inclusion of the entire thickness of the mucoperiosteum; (4) where teeth are present, starting of vertical incisions in interproximal areas to minimize trauma and facilitate gingival reattachment; (5) making of vertical incision mesial to the surgical area, whenever possible, and one tooth distant, and (6) support of the incised flap margins by solid bone when sutured into position (Fig. 3, left). A flap made with these points in mind will be large enough to provide access, can be raised without injury to the tissues, will have an adequate blood supply, will not obstruct vision and will heal without difficulty. Incisions made directly over the operative field usually cause difficulty because the edges are unsupported when sutured. Sloughing at the suture line and a painful open wound with delayed healing may result.

Adequate access often may be obtained by elevation of the mucoperiosteum from the gingival margin for a distance of one or two teeth on either side of the operative site (Fig. 3, right). This will permit retraction of the tissue without the necessity of making a vertical incision, which is definitely a postoperative advantage. If there is danger of tearing the flap during the course of the operation, a vertical incision should be made without delay. If carefully replaced the tissues reattach, and it is impossible to tell clinically in a week or ten days that the gingival attachments have been disturbed.

Removal of Bone

It is impossible to remove tooth structure from the bone unless a sufficiently

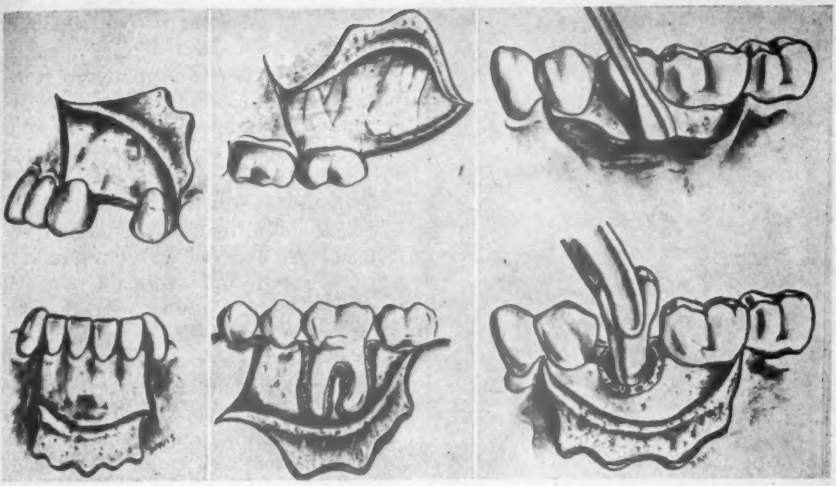


Fig. 3.—Left: Flap preparations in various regions, illustrating principles of flap design. Right: Adequate access to operative field often may be gained without recourse to vertical incisions

large opening is provided. It frequently is necessary to remove surrounding bone in order to provide adequate access for the removal of fractured roots. In the removal of impacted or partially erupted teeth, excessive pressure applied with elevators is ineffective unless all impinging bone is removed. It is also often necessary to remove bone from around completely erupted teeth with peculiar root formation in order to permit their extraction.

The question of removal of bone is highly important but the method of its removal is relatively unimportant so long as good surgical principles are observed. The operator may choose to use osteotomes, chisel and mallet, a bone drill or an automatic chisel. The type of instrument used is largely a matter of personal choice and is of secondary importance. Of primary importance, however, is the basic principle of the careful handling and management of the tissues. The instruments must be sharp and used in such a way that there is a minimum of trauma to the tissues.

Conservation of alveolar bony structure is highly desirable and excessive removal of bone should be avoided whenever possible. This often may be accomplished by splitting or sectioning the teeth. It is possible to be conservative in the removal of bone by removing the teeth in small sections through a small opening in the bone rather than by removing the tooth intact through a large opening. Teeth may be sectioned with a bone drill or a fissure bur, automatic chisel or chisel and mallet (Fig. 4). Splitting a tooth with a chisel often may be facilitated by weakening the tooth in the line of fracture by drilling into the pulp chamber at the cemento-enamel junction with a bone drill. Whenever a mandibular tooth is split with a chisel and mallet the angle of the jaw should be well supported by the assistant in order to prevent shock and trauma to the structures of the temporomandibular joint.

Sutures

The use of sutures postoperatively is to be encouraged. Sutures properly placed

Fig. 4.—Principle of tooth splitting or sectioning permits more conservative management of bony structures

will hold the soft tissues firmly in position against the alveolar bone and often will prevent the accumulation of food and bacteria underneath the soft tissue flap. Well placed sutures often may prevent troublesome postoperative hemorrhage as well. Many kinds of suture materials are available, most of which are excellent. Some operators prefer absorbable sutures because they eliminate the necessity of removing the sutures. Other surgeons prefer nonabsorbable sutures, which are preferable, because their use forces the patient to return for a postoperative visit at which time the condition of the tissues can be observed. In this way early postoperative complications can be detected which might otherwise become serious if allowed to go untreated. The time at which sutures should be removed is arbitrary in most cases. Sutures have accomplished their purpose at the end of forty-eight hours but are sometimes left in for three to five days.

Ordinary black cotton thread makes an excellent suture material. It is inexpensive and well tolerated by the tissues. It is not necessary to use a specially prepared cotton. Spools of ordinary good grade black cotton thread, No. 40 or 50, may be purchased at a ten cent store, cut in desirable lengths, tied on small curved needles and coiled and sealed in coin envelopes (Fig. 5). The envelopes are sterilized by autoclaving and kept in the cabinet ready for use. Several are made up at one time and always are kept available for immediate use. Sutures may be sterilized also by boiling or by dry heat. Black sutures are preferable because they offer a certain contrast to bloody tissues that white does not give. White sutures immediately become red after once passing through the tissues and are difficult to see. Half circle cutting edge needles are best for oral use.

Preoperative Roentgenograms

An indispensable adjunct to successful minor oral surgery is good preoperative roentgenograms. A roentgenogram of every tooth should be taken before its extraction, regardless of its condition. Frequently teeth are so loose that they obviously should be extracted, and one can predict that there will be no problem in their removal. However, roentgenographic examination may show other pathologic features that might need surgical treatment. The cost of an x-ray film is negligible and the time consumed in processing the film is relatively unimportant as compared with the time saved in avoiding operative difficulties. A roentgenogram may save the dentist valuable time at the chair by enabling him to detect and diagnose conditions

that require special surgical consideration. Roentgenograms are highly valuable in the routine extractions in general practice. For example: A maxillary bicuspid may have an unusually curved root, but upon clinical examination alone it would seem to present no problem in extraction. The operator using forceps will undoubtedly fracture the root. Continuing the operation without a roentgenogram, the operator may make an opening into the maxillary sinus, thereby introducing infection, and finally fail to remove the root. After such difficulty, and after having failed to roentgenograph the tooth preoperatively, the dentist hesitates to quote a fee above the usual charge for an uncomplicated extraction. With good roentgenograms one can make an accurate diagnosis, plan the procedure and be paid a fee for the operation commensurate with the service rendered and the responsibility entailed.

Hypercementosed roots also present a difficult problem in extraction. If the surgeon knows about the condition beforehand, the problem becomes much less difficult because he immediately plans a flap and removes enough bone to permit extraction of the tooth. Before performing the operation, he is able to advise the patient about the possibility of complications and also is enabled to quote in advance a fee adequate to compensate him for a highly technical service. If complications develop they are always much easier to explain postoperatively if the patient has been advised about the possible occurrence before the time of operation.

Regardless of how simple the extraction of a maxillary or mandibular third molar may appear, no attempt at extraction should be made until the tooth has been roentgenographed. Even a fully erupted, perfectly normal appearing tooth may have an extreme distal curvature of the root and will present just as much technical difficulty in its removal as a severely impacted third molar. Both the operator and the patient should know the problem before the operative procedure is started.

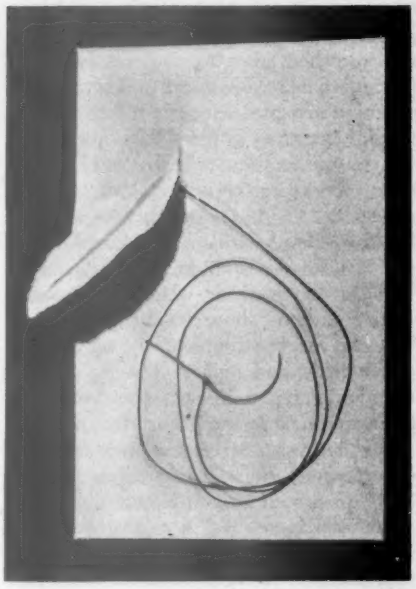


Fig. 5.—Suture sealed and sterilized in small coin envelope is always readily available

The presence of widely divergent roots, thin roots and fused teeth are a few of many other conditions, shown by roentgenograms, that might cause considerable difficulty during extraction if their presence were not detected.

Contraindications for Operation

General conditions.—A brief history of the patient may bring to light certain constitutional or general conditions that contraindicate minor oral surgery of an elective character without consultation with the patient's physician. Blood dyscrasias, uncontrolled diabetes, syphilis, tuberculosis and certain pulmonary, cardiac and renal diseases are chief among these conditions.

Local conditions.—Frequently, patients presenting themselves for minor oral sur-

gery should not be operated upon until measures are taken to clear up local infection. Severe advanced oral sepsis, accumulation of calcareous deposits on the teeth, hyperemia of the soft tissues, acute Vincent's infection and poor oral hygiene owing to neglect contraindicate immediate operation. It is obvious that a clean healthy mouth will heal much more quickly and is less liable to complications than an infected or unhealthy mouth. When patients show conditions of this type the surgeon should insist on an oral prophylaxis, and suggest that the patient use hydrogen peroxide every two or three hours, with a soft toothbrush, and also as a mouthwash for at least two days before the operation. It is gratifying to see how quickly and completely many of these conditions of the mouth clear up within a day or two under this regime.

Extraction is contraindicated in the face of acute suppurative processes about partially erupted mandibular third molars. This condition is usually seen in young persons whose third molar teeth are in the process of erupting. An ideal situation for the development of infection exists under these pericoronal gum flaps. The region is hot, moist and dark and contains decomposed food products in which bacteria grow rapidly. Infection may become serious before treatment is effective.

Operation in the presence of acute pericoronal infection may lead to severe infections of the bone and soft tissue. Under such conditions a policy of noninterference will pay dividends over a long period of time. Many operators now depend on the sulfonamides and penicillin to prevent complications in operations on acutely infected third molars, but the fact remains that there are many infections in the bone and deep tissues despite the use of these highly effective drugs.

A vicious cycle is set up in infection about the crown of the mandibular third molar. Infection is followed by edema which results in tightening of the flap over the crown of the tooth. As the flap becomes tighter the infection dams up behind the tooth, and a pericoronal abscess develops. As the abscess develops there is a greater degree of edema, increased infection and its further damming up, with spread of the inflammatory process to adjacent soft tissues, including the muscles of mastication. The result is trismus, pain, sore throat, swelling and hyperpyrexia. At times, constitutional findings such as general malaise, chills, fever and rapid pulse are observed.

The treatment of early pericoronal infections is almost never surgical. Occasionally it is necessary to incise the gum flaps to establish drainage, although rarely. A blunt probe, passed carefully over the crown of the tooth into the infected pocket, is raised upward slowly to stretch the flap over the crown of the tooth. This will allow a few drops of purulent discharge to escape. The infected region is then irrigated with 5 to 10 cc. of normal saline solution. A 10 cc. syringe is used, having a long, thin, blunt needle with a gentle curve at the end (Fig 6, left). The syringe may be prepared easily in the office. The end of a 20 gage 3½ inch needle is held in the flame until it is red. It is then bent to a gentle curve and plunged in water, and the sharp point is ground off with a stone. The long needle is introduced easily into the third molar region, even if trismus is severe.

The region under the flap is irrigated with 5 to 10 cc. of normal saline solution or sterile water. It makes little difference which solution is used. Irrigation and the establishment of drainage are the important beneficial factors. With the same syringe, about 1 cc. of iodine lotion is used for irrigation of the pericoronal pocket. Iodine lotion is prepared as follows: phenol, 5 per cent, 6 cc.; tincture of aconite 12 cc.; tincture of iodine 18 cc., and glycerin 24 cc.

The drugs are present in the ratio of 1:2:3:4. One cubic centimeter is ade-

quate for each treatment. This prescription will make 60 cc. of solution. Usually one or two treatments of irrigation with normal saline solution and iodine lotion will clear up the pericoronal infection. Chemotherapy with oral penicillin also has been effective in clearing up this condition. Such management may take the place of more common and less effective present methods.

About one week after all clinical signs of infection have subsided the patient is examined. If the infection has subsided, an appointment is made for removal of the tooth. In most cases in which there has been infection about the crowns of partially erupted teeth it is inadvisable to try to save them, for invariably it means that there is insufficient room for their eruption. These teeth are potentially dangerous, because they may become reinfected and lead to serious complications. Occasionally, if there seems to be room for the tooth in the mouth, one may temporize and attempt to save the tooth. However, we have seen patients, with history of two or three acute pericoronal exacerbations, in whom extensive soft tissue involvement and osteomyelitis of the mandible finally developed. It is good judgment to remove the partially erupted tooth as soon as the infection is controlled.

At the time of the patient's first visit for treatment of a pericoronal infection the mouth should be inspected for the possibility of contact of the maxillary third molar with the mandibular soft tissues, which aggravates and may prolong the inflammatory process. In this event it is good surgical procedure at the time of the first visit to extract the maxillary third molar and to treat the mandibular third molar as already outlined. The maxillary tooth is usually free from infection and it is safe to extract it during the initial visit.

Frenectomy

On examination of many edentulous mouths, and in partially edentulous mouths in which extraction is contemplated in preparation for dentures, a heavy fibrous frenum may be noted, binding the tissues of the upper lip to the crest of the alveolar ridge. It is possible to eradicate this fibrous band by a simple surgical procedure, thus facilitating the insertion of dentures and insuring greater comfort to the patient. A simple method is to stretch the upper lip, thereby elongating the band of tissue forming the frenum. With a sharp pair of scissors the frenum is severed, with one continuous cut, about 2 or 3 mm. above the level of the alveolar ridge. The cut is not made directly in contact with the alveolar ridge, because it is desirable to have two small tissue flaps to approximate for covering the bone in the region from which the frenum has been excised. Immedi-

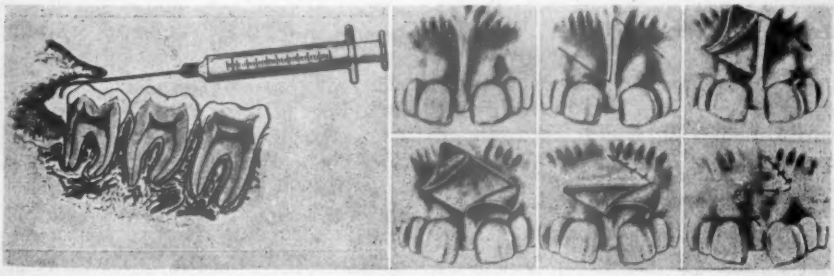


Fig. 6.—Left: Long, thin, curved, blunt needle for irrigation of pericoronal recess. Right: Application of principle of Z plastic procedure for correction of short labial frenum

ately after the frenum has been cut, the lip will retract, and the points of the scissors can be inserted into the defect in the mucous membrane, opened slightly, and then passed directly to the bone. The scissors are closed, cutting the muscle and fibrous tissue completely to the bony level. With the lip still stretched, the margins of the mucous membrane are approximated with three or four sutures.

If the frenum is unusually heavy it may be grasped with a hemostat at the position at which the tissue is to be sectioned. A knife is passed on both sides of the hemostat to excise the enclosed tissues completely. Care, too, in this case, is given to leaving enough soft tissue to cover the exposed bone in the mid-line. If the heavy band of tissue attaches directly to the crest of the alveolar ridge in the anterior region, it is advisable to excise it completely in order to prevent its interference with the seating of the denture.

It is judicious to reserve this procedure for those patients in whom it is probable that the frenum will interfere with the seating and wearing of a denture. Some prosthodontists teach that the frenum has a definite physiologic function and that interference with it results in scar tissue which makes the wearing of a denture uncomfortable and may change the expression of the face. It is desirable to perform the frenectomy at the same sitting at which the maxillary anterior teeth are extracted. The frenectomy should precede immediately the extraction of the teeth. The Z plastic procedure is also a most useful and effective method of treating the short heavy frenum and is applicable to the release of the interfering buccal frenum and buccal scar contracture bands (Fig. 6, right).

Multiple Extraction of Teeth

There is no hard and fast rule that will dictate the number of a patient's teeth to be removed at one sitting. The number may be influenced by any one of several factors including: the general condition of the patient; the condition of the teeth; the extent of disease present; the type of anesthesia; the facilities available for postoperative care, and the time the patient is willing or able to spend in convalescence. If it is possible to manage the patient properly both preoperatively and postoperatively, we not infrequently extract all of the teeth at one time. On the other hand, only a few teeth are extracted at one sitting from certain persons with constitutional disorders or extensive infection about the teeth, or those who must remain at their work. Frequently four impacted molars are removed during one period of local anesthesia.

In most cases of multiple extraction, some trimming of the bone and soft tissues is necessary in order to give good contour to the ridge. This necessity should be anticipated before extraction is begun so that the soft tissues may be prepared in advance. A sharp blade is passed along the gingival crevice about the necks of the teeth on the buccal and labial surfaces in the entire operative area. The tissue is then retracted slightly with a periosteal elevator, separating the periosteum from the bone. The mucoperiosteum usually will retract readily if the proper plane of cleavage is entered. Any attempt to elevate the soft tissues above the periosteal level will result in tearing and damage to the flaps. Periosteal elevators are available in all surgical supply houses, but almost any blunt pointed instrument will suffice. A small wax spatula makes an excellent instrument for this use. The mucoperiosteum should not be retracted any farther than is necessary in order to accomplish the operation and trim the bone. Flap reflection should never exceed the requirements of adequate access. Over-retraction of the mucoperiosteum may result in loss of landmarks, displacement of muscular attachments and excessive postoperative traumatic edema and trismus.

The use of elevators against the teeth and bone to break the periodontal attachments is advisable in any instance in which difficulty is anticipated with the use of forceps. This procedure often will prevent fracture of small root tips and permit extraction of teeth ordinarily difficult to remove with forceps.

Alveolectomy

After extraction of the teeth the obvious prominences of bone that might interfere with insertion of a prosthetic appliance or delay healing of the ridge are removed with rongeur forceps. In this procedure, too, the keynote of success is conservatism. Misinterpretation of the term alveolectomy by many dentists has resulted in the ruin of many mouths for dentures. To many dentists alveolectomy has meant complete eradication of the entire buccal cortical plate of bone. This procedure results in a well shaped ridge at the time the patient leaves the operating room, but, as the usual physiologic processes of absorption take place these patients finally have very little alveolar structure on which to support a denture. It is more desirable to make the denture to compensate for a slightly enlarged alveolar ridge for a year or two, looking forward to a time fifteen years later when the patient will have a substantial ridge. Only the bone which is likely to interfere with the fitting of a denture should be removed. After the use of the rongeur forceps, the bone is contoured and smoothed with a sharp bone file.

If any significant amount of bone is trimmed away, as is occasionally necessary if the upper ridge is rather prominent, an excess of soft tissue will be noted. This tissue should be trimmed to the extent that the edges of the flaps can be approximated accurately. Excessive soft tissue, if left untrimmed, may result in a flabby alveolar ridge. Before suturing, it may be advisable to use sulfanilamide powder. This is not desirable unless an unusual degree of infection is present. The introduction of the sulfonamides into dentistry has been one of the great advances in minor oral surgery during the past decade, but they must be used with caution. The drug is dusted in the region rather than packed into the socket. It has been found that too much of the drug in the socket acts as a foreign body and causes some delay in the process of healing.

Sutures are placed accurately in order to approximate the tissue over the alveolar ridge. It is best to place these sutures across the areas supported by the interseptal bone. If the sutures are placed across the tooth sockets they have a tendency to pull the tissue into the sockets, causing irregularity of the ridge and exposure of interseptal bone crests.

If the teeth are extracted and operation is performed according to the technics described, the incidence of postoperative complications, such as dry socket and infection, is remarkably reduced, the patient is more comfortable and the final result is a ridge on which dentures can be seated comfortably.

Cuspid Eminence

In the extraction of the maxillary cuspid, it is imperative that care be taken against fracture of the prominent overlying cuspid prominence of bone. This is also true regarding extraction of teeth that have stood alone for a long period of time during advanced atrophy of adjacent alveolar bone. Unless care is exercised the bone over these teeth might fracture, leaving an ugly and serious defect of the alveolar ridge. The bone over the maxillary cuspid region is thin and liable to fracture. Cases are seen in which fracture of the bone not only has occurred in the region of the cuspid root, but also has extended to involve the labial plate over the lateral incisor and the buccal plate over the bicuspid root. Sacrifice of this amount of bone is serious

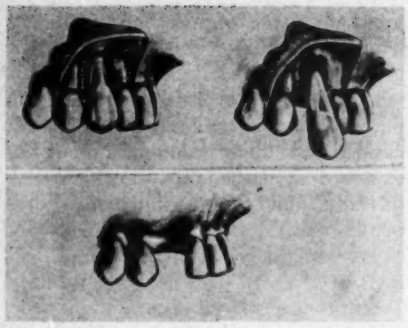


Fig. 7.—Removal of bone from cuspid eminence facilitates extraction of maxillary cuspid and lessens possibility of fracture of adjacent bony tissue

and the defect never regenerates completely.

A procedure which seems rather radical for the removal of maxillary cuspids, but in the final analysis is quite conservative, is simply executed. This procedure is carried out after an attempt has been made to dislodge the tooth by using a moderate degree of force on the forceps. If the tooth does not yield, the forceps is removed and the mucous membrane is elevated from the bone (Fig. 7). For multiple extractions the mucoperiosteum can be retracted by continuance of the incision along the gingival margins of the teeth. If only the cuspid is to be removed it may be necessary to make a vertical incision and to prepare a flap to give access to the bone of the cuspid eminence. When the cuspid is one of several teeth to be removed from the immediate region it should be removed first, leaving the adjacent teeth for support of the bone over the cuspid. The lateral incisor and first bicuspid should be removed after removal of the cuspid.

The bone over the cuspid root on the labial surface is removed to approximately two thirds of the length of the root. This is done by a sharp hand chisel, usually, but may be accomplished with a chisel and mallet, automatic chisel or bone drill. The excision of the bone is carried well down along the mesial and distal aspects of the root in order to ensure removal of all impinging bone and release of the root. It is usually easy, thereafter, to remove the tooth with forceps. After removal of the tooth a bone file is used to smooth the margins of the bony defect. The mucoperiosteal flap, which has been retracted carefully without injury to the periosteum, is replaced and sutured in position. The complete regeneration of bone in this region can be anticipated after healing of the tissues.

Sectioning of Teeth

Some maxillary molars have widely divergent roots. X-ray examination makes obvious the impossibility of extracting these teeth by the usual method with forceps. If forceps is used, fracture of either the root or large amounts of buccal plate will occur, and occasionally a large part of the floor of the sinus is torn away.

Sectioning the roots offers an opportunity to remove the tooth with minimum damage to the soft tissue and bone. The mucoperiosteum is elevated from the buccal cervical margin of the tooth. The forceps is applied and, with gentle but firm movements, an attempt is made to loosen the tooth in its alveolar bed. This is not done with the purpose of extracting with the forceps but simply to break some of the periodontal attachments. With bone drills the two buccal roots are cut from the crown at the level of the cemento-enamel junction (Fig. 8, above). The crown with the lingual root then can be removed in one piece. The two buccal roots are removed by separating them and loosening with elevators.

Another method (Fig. 8, below) used occasionally is removal of the crown of the tooth before removal of the roots separately. This is done by drilling holes from the buccal aspect at the cemento-enamel junction, which is the softest part of the tooth. A groove is cut in the tooth

at this point and a blunt instrument, preferably an elevator, is used to fracture the crown of the tooth from the root. A bone drill is used to separate the lingual root from the two buccal roots and in turn the two buccal roots are separated from each other. The roots then can be removed without difficulty with elevators. The roots can be removed more easily if the tooth is loosened slightly by elevator or forceps before sectioning is begun. This breaks the periodontal attachments, so that the roots subsequently are removed much more easily.

A modification of this procedure can be used in cases in which one root is unusually curved. The curved root can be separated from the crown as described and the crown with the two straight roots removed with forceps. The tortuous root is then removed with bone drills and elevators. This root sectioning technic is also useful when the crown of the tooth has been removed inadvertently during forceps extraction of any maxillary molar tooth whose roots are separated.

The same principle is used with modifications in the extraction of mandibular molars with widely divergent roots (Figs. 9 and 10). Although the crown may be removed together with either the mesial or distal root, it is usually easier, in sectioning the mandibular teeth, to remove the crown of the tooth. A bone drill is used to separate the two roots by removal of the tooth substance between them. This leaves a space between the roots which permits the use of elevators, from the mesial or distal aspects. By elevating the roots into the defect between them they are readily removed.

Relief of Impinging Bone

A bone drill is useful in the removal of teeth with hypercementosis of the roots. By using the bone drill on the distal or mesial portion of the roots, enough bone is removed to give adequate clearance for extraction of the tooth by forceps (Fig.

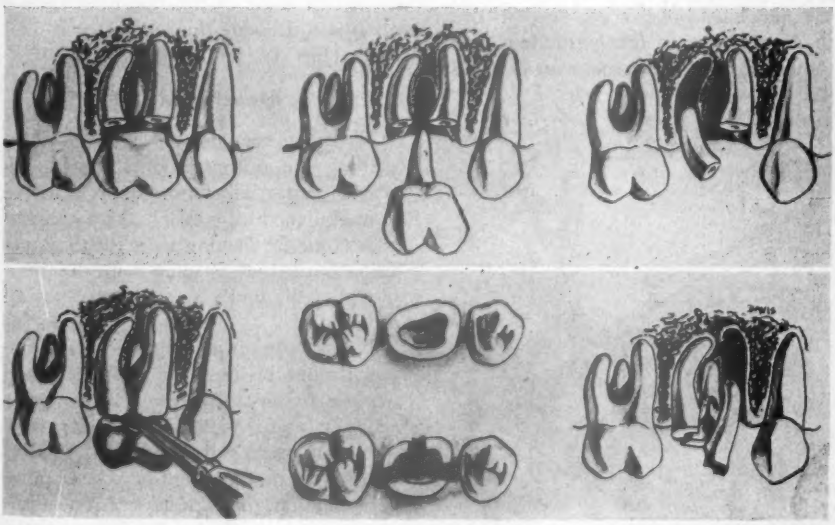


Fig. 8.—Above: Principle of tooth sectioning applied to maxillary molar with widely divergent buccal roots. Crown is removed with lingual root and two buccal roots are removed separately. Below: In certain instances extraction may be facilitated by removal of crown and roots individually

11). Sometimes these teeth are hypercementosed not only mesially and distally, but also from a buccal-lingual aspect. When this is the case, it is necessary to remove some of the buccal plate in order to effect removal without fracture of the roots.

Whenever the buccal plate must be removed, a mucoperiosteal flap should be prepared. If a vertical incision is used it should be made far enough from the operative field to ensure a shelf of solid bone for support of the flap margin when it is returned to position. If the tissue can be retracted from the gingival margin of the adjacent teeth, access may be gained without making a vertical incision.

Extraction of mandibular molars with bowed roots or those surrounded by heavily calcified bone may be facilitated by removal of part of the bone between the roots. This is done easily by retracting the mucoperiosteum about the cervix of the tooth on the buccal and lingual surfaces. A bone drill is passed into the interseptal space between the roots and the necessary bone is removed in order to give clearance for extraction of the tooth and to provide room for better application of cowhorn forceps to the crown of the molar tooth.

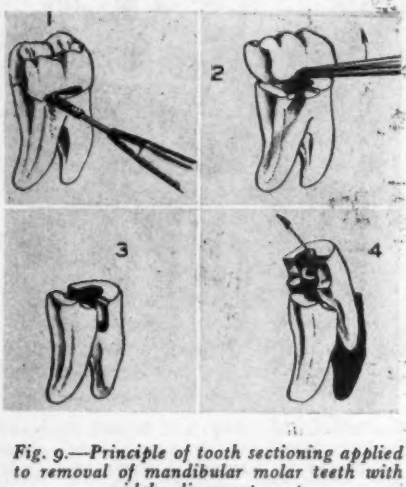


Fig. 9.—Principle of tooth sectioning applied to removal of mandibular molar teeth with widely divergent roots

Fractured Roots

The bone drill is useful in the removal of small fractured root tips in all regions. A small drill is passed into the socket and around the root fragment until sufficient bone has been removed for dislodgment of the fragment from the bone. Often use of the bone drill alone will cause loosening of the root so that the fragment may be picked out with a small forceps or an elevator.

All teeth accidentally fractured in the course of extraction should be examined before any attempt is made to remove the root fragment. Careful examination of the root may give a clue that will simplify its removal. This is especially true when the root has fractured at an angle. Examination will help determine the position of the long side of the remaining portion of root. A sharp pick elevator inserted between the bone and the sharp angle of the fractured surface often will dislodge the root without difficulty (Fig. 12, left).

Impacted Molars

There has been extensive discussion regarding the optimum time for the removal of partially erupted or impacted mandibular third molars. Many practitioners advise leaving these teeth in position until there is some definite indication that the tooth is causing the patient difficulty.

In my opinion all impacted third molars should be removed unless there is obvious reason to believe that they may erupt as useful teeth. The earlier these teeth are removed the less possibility there is for development of postoperative complication. The postoperative course, too, is much shorter for younger patients. In the younger age group all impacted or malposed molars should be extracted, because most of them eventually will give

difficulty and may lead to serious complications in later life. In the age group beyond 50 years, care and judgment must be exercised in the management of impacted teeth. Unless the patient has symptoms or findings relating directly to disease about the impacted teeth, it is advisable to leave them undisturbed.

The Army and Navy have found it practical to roentgenograph and remove all impacted or malposed unerupted teeth of young men entering Annapolis or West Point. It has been found by experience that officers, badly needed in the line of duty, have been off duty because of difficulty with third molars. Treatment that is practical in military life should be considered practical in civil life.

It is inadvisable to tell a patient to retain the third molars until he has difficulty, because difficulty not associated with obvious disease in the third molar area may occur. Obscure types of neuralgia and neuritis about the head may cause the patient untold discomfort before the source of the pain is finally discovered.

Many cases are seen in which the patient has been advised to retain the tooth until he has pain. By the time toothache finally develops, erosion or caries of the adjacent second molar caused by the presence of the impacted third molar may be found. This results in loss of both molars.

In the surgical management of third molars good roentgenograms are of vital importance. Many failures in general practice result from the operator's starting out with inadequate roentgenograms. If the x-ray picture fails to show all of the root, it is of little value. It should show the farthest end of the root and all of the adjacent bony structure.

Roentgenographic Aid

Careful study of the roentgenogram may show certain peculiarities that might lead to complications. These complications should be discussed with the patient before extraction of the tooth is undertaken, particularly if there is possibility of injury to the inferior alveolar nerve. This possibility can be predetermined in some cases if careful examination of the roentgenogram shows a shadow or fading away of the density of the tooth structure in the region traversed by the inferior alveolar canal, usually indicating that the inferior alveolar nerve passes through a notch in the side of the root of the tooth or that it passes through a canal in the root. Extraction of these teeth offers a possibility of injury to the inferior alveolar nerve, followed by postoperative anesthesia of the lower lip on the operative side. Although not much can be done about this finding, if it is noticed preoperatively, it is always advisable to warn the patient of the possibility of anesthesia rather than try to explain the situation after it has developed.

The anesthesia which follows injury to the inferior alveolar nerve usually is not serious. Of the numerous complications of this type observed in our clinics, we have noted only one or two that have failed to regenerate completely within eight to fifteen months. Some of the nerves will recover slowly, the length of time depending on the extent of damage at the time of extraction and the distance

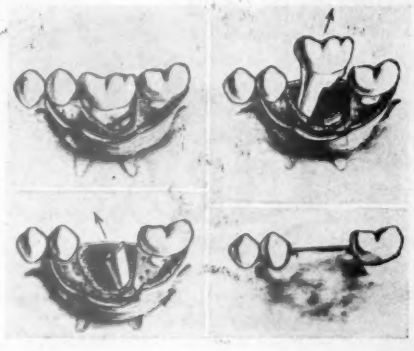


Fig. 10.—Sectioning of one root of mandibular molar is often sufficient

of the separated portions of the nerve. Cases are seen in which the nerve has been compressed without being severed, when the tooth on which elevators were used was pushed backward. Recovery from anesthesia in minor injuries of this type is usually a matter of six to eight weeks.

Another roentgenographic view which sometimes proves of value is one taken from below the inferior border of the mandible, with the film on the occlusal plane over the third molar area. This will locate the tooth in relation to buccal and lingual structures.

Good access to the mandibular third molar region can be obtained by preparation of a flap in which the usual vertical incision on the buccal surface is not used. An incision is carried along the gingival margins on the buccal surface from the distal aspect of the mandibular second bicuspid to the distolingual aspect of the second molar. The incision is then carried laterally and posteriorly over the operative site as far as necessary. The mucoperiosteal flap is elevated from the second bicuspid posteriorly, giving excellent access to the mandibular third molar region. Previous to the development of this technic, we found that much postoperative difficulty resulted from the vertical incision which many times broke down and failed to heal properly. No damage is done in breaking the gingival attachments about the erupted adjacent teeth. If this breaking is done carefully, complete regeneration and reattachment will occur in ten days to two weeks, after which time it is impossible to tell that the gingival attachment has been severed.

Adequate bone must be removed in order to extract the third molar. The bone may be removed with a bone drill, chisel and mallet, automatic chisels or hand chisels. It makes little difference which instruments are used if the tissue is handled carefully and in a surgical manner.

The bone may be managed conservatively if the tooth is removed in sections, using the splitting technic. Such management is advisable, as the extraction of the tooth in one piece necessitates re-

Fig. 11.—Above: Relief of bone impinging on mesiodistal and interseptal regions with bone drill often provides adequate clearance for removal with forceps of mandibular teeth with abnormal roots. Below: If relief of bone does not permit extraction with forceps, it may be necessary to remove buccal bone

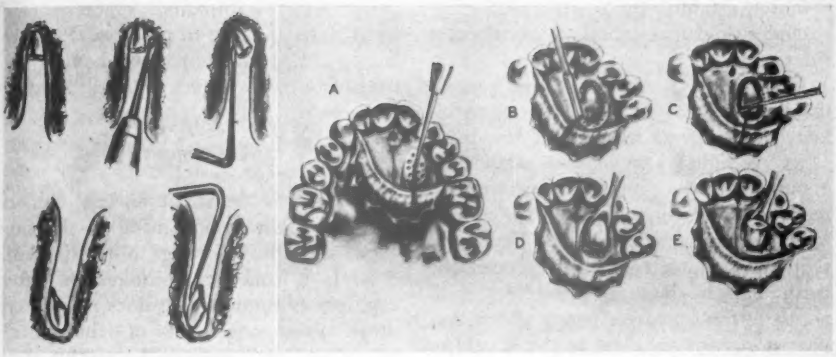


Fig. 12.—Left: Methods of removal of fractured root tips. Right: Flap design for removal of palatally impacted cuspid, showing sectioning of tooth to facilitate its removal

moval of large amounts of bone. After extraction it is important to clean up the operative region thoroughly before suturing the tissues into position. Compressed and sharp, bony prominences may lead to postoperative pain. Small fragments of tooth structure or loose bone in the socket or underneath the flap should be removed carefully in order to prevent postoperative complications. The region is frosted lightly with sulfanilamide crystals from a powder atomizer and the flaps of mucous membrane are sutured into position, fine cotton sutures being used. It is always advisable to take roentgenograms after extraction of impacted teeth or those difficult to remove, because of the possibility of clinically overlooking tooth fragments or loose bits of bone. If a good blood clot can be established immediately in the operative region a dressing is not inserted. However, if the region is unusually large, and bleeding is sluggish, some type of sedative dressing should be placed in the socket in order to give the patient freedom from pain and to prevent saliva and food from getting into the operative defect. An absorbable, sedative, surgical ointment or a short length of half inch surgical gauze saturated with one of the obtundent drugs may be used to dull the pain and act as a wick to facilitate drainage. The best healing agent in any wound is a firm, healthy blood clot. There is no drug that will not delay healing to a certain extent if used in a wound. Whenever possible we should use dressings in postoperative wounds only when the indications are definite.

Impacted Cuspids

Roentgenograms are of paramount importance before removal of impacted cuspids. About 10 per cent of all impacted cuspid teeth are found on the labial surface and the remaining 90 per cent are found on the lingual or palatal surface of the alveolar ridge. It is important to know on which side the tooth lies before beginning the operation. We have seen many surgeons embarrassed by incising the lingual surface when the tooth was on the labial aspect of the ridge. The 2¼ inch by 3¼ inch occlusal x-ray film should be exposed from a vertical angle in order to demonstrate the position of the tooth. The x-ray packet is placed in the mouth on the occlusal plane, and the exposure is made from the vertex of the skull directly on the plane of the long axis of the maxillary incisor teeth. The usual exposure without cassette is twelve to fifteen seconds. Such a roentgenogram will

definitely establish the position of the impacted cuspid in relation to the alveolar ridge.

If the tooth is on the palatal surface the incision advised is the one that follows the gingival margins of the teeth (Fig. 12, right). An incision made 2 or 3 mm. from the gingival margin of the teeth is usually not adequate for the removal of impacted cuspids. The small strip of tissue left in contact with the teeth might be damaged or interfere with access to the operative region. Most impacted cuspids are close to the lateral or central incisors, and unless the flap is carried from the gingival margin it is difficult to see the region well enough to avoid possible injury to the adjacent teeth. The incision carried around the gingival margins of the teeth may be modified by an incision into the vault of the palate in cases of unilateral impaction, but if the impaction is bilateral the flap of choice is one that extends from bicuspid to bicuspid. The structures emerging from the incisive canal are not particularly significant in the function of the palate and can be cut without hesitation. The slight bleeding from the incisive vessels can be controlled by injection of procaine into the incisive canal. Generous incisions can be made in the palate without danger of involving any important anatomic structures.

After the mucoperiosteal flap is reflected, the bone is removed in the most convenient manner from the region overlying the tooth. Bone drills, chisel and mallet, hand chisels or an automatic chisel may be used. After all impinging bone has been removed the tooth is removed with an elevator. Sectioning of the tooth may facilitate extraction of maxillary cuspids and may permit greater conservatism in the removal of bone. All sharp fragments of bone are removed, and the area is cleansed of debris and frosted with sulfanilamide powder. The flap is replaced, closing the wound without drainage, and sutures are placed between the interproximal spaces of the teeth to fix the flap in position. Pressure is applied to the palate by having the patient bite on sponges until all bleeding has ceased.

Ecchymosis

Ecchymosis or subcutaneous hemorrhage is often embarrassing to the surgeon and disconcerting to the patient. This is a common complication after multiple extractions and does not always mean mismanagement of the tissue. Many patients have a prolonged bleeding time and bleed easily into the soft tissues. Ecchymosis may occur after multiple extractions if the flaps have been sutured unusually tightly. The underlying tissues continue to bleed and ooze, and since the blood cannot escape into the mouth it sometimes diffuses subcutaneously. Undoubtedly, some cases of ecchymosis are caused by rough handling of the tissues. Ecchymosis is usually seen in older women, and particularly in those of fair complexion. Most of these patients will give a history of bruising easily on other parts of the body.

If this complication has occurred previously in a patient, and is anticipated, it is advisable to perform an operation in stages and to apply pressure and ice bags immediately after the surgical procedure has been completed. In this way ecchymosis many times can be prevented.

After ecchymosis has developed it is too late to do anything about it. The skin will go through the usual range of colors and usually will return to normal in about two weeks.

Loss of Roots

Another complication frequently seen in minor oral surgical practice is the loss of roots into the maxillary sinus. This complication arises in almost every practice in which a large number of teeth are extracted. The accident is a result, generally, of an attempt to remove roots by

upward pressure with elevators. Great caution should be used to avoid this complication, as it sometimes leads to rather serious consequences. The loss of a root in the maxillary sinus does not indicate negligence, but the patient should be advised of the complication and the root should be removed without delay. Although many of these roots may cause little difficulty, severe suppurative maxillary sinusitis often results from foreign body reactions in the presence of a lost root.

It is bad judgment to attempt removal of the root through the tooth socket. This approach to the maxillary sinus does not give an adequate view of the sinus and it is almost always impossible to remove the tooth through this opening. The approach is also dangerous because of the possibility of creating a permanent oral maxillary fistula which can be closed only by difficult plastic procedures. After loss of a root in the maxillary sinus it is desirable to have the patient treated by an otologist or an oral surgeon if the dentist does not feel qualified to remove the root. To one experienced in minor oral surgical procedures the removal of a root is not a difficult operation. The sinus is approached through a semicircular incision extending from the apex of the maxillary cuspid in a curved fashion almost to the gingival margin in the bicuspid region, and then upward over the molar area. The incision is carried low to assure complete coverage of the opening with a mucoperiosteal flap after removal of the root. The mucoperiosteum is elevated and the maxillary sinus is entered above the apexes of the bicuspid teeth with a bone drill, antrum bur or rongeur forceps. The opening is made much higher in the bone than the lowermost part of the incision in the soft tissues in order to avoid the tooth roots. The root fragments can be removed with cotton forceps or an antrum curet. A useful procedure is flooding the maxillary sinus with sterile saline solution and aspirating the fluid with a small suction tip. Often the root fragment will be found adhering to the end of the suction tip after the fluid has been aspirated. The flap is replaced and sutured without a drain.

Opened Sinus

Occasionally one can see into the maxillary sinus after the uncomplicated removal of a tooth. The roots of some teeth extend into the maxillary sinus, being separated from the sinus by only the membrane of the antrum. If the antrum is opened accidentally, no effort should be made to irrigate the socket or the antrum. The socket is permitted to fill with a blood clot. In practically all cases there will be complete healing without difficulty, simply by establishment of a good blood clot in the tooth socket.

If there is an opening and inadequate bleeding in the socket, a small gauze dressing is laid carefully over the opening of the tooth socket, not packed in, to keep saliva and food out of the socket or maxillary sinus. The patient is instructed to bite lightly on the gauze until bleeding has occurred and a clot has organized in the tooth socket. If the opening is too large and shallow to permit organization of a clot, an attempt should be made to close the opening by approximation of the buccal mucosa to the lingual soft tissues. Removal of some of the buccal bone may make possible accurate approximation of the soft tissue.

Whenever the maxillary sinus has been opened the patient should be given instructions against blowing the nose or sucking blood out of the tooth socket. He should also be given a prescription for nose drops. Ephedrine, 1 to 3 per cent, in saline solution is a good drug for shrinking the nasal mucous membrane. Neo-synephrine hydrochloride is excellent for keeping the maxillary ostium open so that blood accumulating in the maxillary sinus will drain into the nose. In this way normal drainage of the max-

illary sinus is maintained and the likelihood of infection will be reduced.

Foreign Bodies

Broken instruments such as needles, bone burs, portions of forceps or other instruments lost in the soft tissues sometimes complicate a case. These instruments should always be removed from the tissues. It is malpractice knowingly to leave any broken instrument in the tissues without advising the patient of the accident. Fortunately, the incidence of broken needles is becoming rare. Needles are better made and are being handled with greater caution. A broken instrument is never a surgical emergency, but it is advisable to remove it at the time, if it is convenient. The removal may require the services of a specialist and may be done at the convenience of the surgeon and the patient.

Complications caused by foreign bodies are not rare. The postoperative retention of pieces of tooth substance, sections of broken bone or fragments of metal filling material may lead to difficulty. Their presence will interfere with the normal healing of tissues, resulting in a painful region with large amounts of granulation tissue and, usually, suppuration. Any regions that do not heal postoperatively in a reasonable time should be roentgenographed for foreign bodies. Even if the roentgenograms are negative the regions should be anesthetized, opened and explored. Occasionally bone fragments which do not show in roentgenograms become devitalized and remain as foreign bodies, causing severe reactions.

Conclusions

The management of minor surgical problems may be an interesting, satisfactory and gratifying component of the general practice of dentistry. To pursue these problems to a successful conclusion in the dental office, observation of certain fundamental principles is essential. Failure to observe any one of the following principles may lead to failure of the operation, unhappiness for the patient and disappointment for the dentist:

1. A sound and accurate diagnosis substantiated whenever possible by adequate roentgenographic evidence.
2. Proper mental and physical preoperative preparation of the patient with generous use of premedication whenever indicated.
3. The complete surgical plan entirely fixed in mind before the operation is begun.
4. An adequate armamentarium in good condition at hand to fulfill the needs of all possible variations in procedure.
5. A good source of light for illumination of a small field.
6. Operating technic based on the principles of: asepsis; complete and profound anesthesia; adequate exposure of the operative field; hemostasis; adequate but conservative removal of bone when indicated; careful debridement and closure of the wound, and utmost care in the conservative manipulation of tissue at all times.
7. A practical knowledge of anatomy, physiology and pathology of oral tissues.

Consideration of these fundamental factors as a basis for procedure will result in solution of the usual minor problems of oral surgery, encountered in the everyday practice of dentistry, with a minimum of complications and disappointments.—*School of Dentistry, University of Michigan.*

ORAL ADMINISTRATION OF PENICILLIN IN THE TREATMENT OF VINCENT'S INFECTION

Daniel E. Ziskin,* D.D.S.; Austin H. Kutscher, D.D.S., and Ada R. Clark,* Ph.D., New York

THIS study is presented as a result of observations made on the effects of penicillin administered in the oral cavity of patients with symptoms of acute Vincent's infection. Reports have been issued on intramuscular injection of penicillin, submucous injections into the oral mucous membranes and topical applications to the oral mucosa in the form of powders, creams, solutions, sprays, pastilles and troches, all of which have been used in the treatment of Vincent's infection of the gingivae.

Our study differed from those reports in that the patients were requested to swallow buffered penicillin tablets specially prepared for this purpose. In this way, we were able to test the drug's efficacy on the course of the disease through its systemic action on the flora found on the surface and in the gingival crevices.

Mahoney, Arnold and Harris[1] demonstrated the successful action of penicillin against spirochetes. The action of the drug against most known pathologic bacteria has been studied both *in vitro* and *in vivo*.[2] These investigations, as well as studies dealing with the organisms associated with Vincent's infection, indicate that the Vincent's flora is susceptible to penicillin.

Naegeli and Morginson[3] have reported successful treatment of Vincent's infection by intragluteal injections of 25,000 Oxford units of penicillin every three hours. They noted that treatment of pockets about the teeth, necessary scaling and the removal of other dental defects were essential in some cases in order to obtain smears negative for Vincent's infection.

Cofield, Ferguson and Toye[4] suggested that penicillin had promise if it were used topically in a dilution of 500 units per cc. of fluid, but found the removal of all irritating dental defects essential to complete success.

Schuessler, Fairchild and Stransky[5] reported satisfactory results from intramuscular injections of penicillin (25,000 units every three hours) and from two methods of topical administration, an aqueous solution and a lycopodium powder.

Stern[6,7] cited incidents of 6 patients successfully treated by topical application of penicillin and another series of 5 patients responsive to submucous injections into the oral tissues.

Strock[8] used penicillin by topical ap-

Read before the New York Section of the International Association of Dental Research, February 14, 1946.

*Columbia University, School of Dental and Oral Surgery.

1. Mahoney, J. F.; Arnold, R. C. and Harris, A., Penicillin Treatment of Early Syphilis: A Preliminary Report. *Am. J. Pub. Health* 33:1387 (December) 1943.

2. Kolmer, John A., *Penicillin Therapy*. New York: D. Appleton-Century Company, 1945, pp. 68, 69, 102, 103, 107, 108, 117, 190, 144, 981, 982.

3. Naegeli, F. C. and Morginson, W. J., Treatment of Vincent's Infection With Penicillin. *J.A.D.A.* 32: 1303 (November 1) 1945.

4. Cofield, K. R.; Ferguson, E. W. and Toye, A. E., Topical Application of Penicillin in the Treatment of Vincent's Infection. *J.A.D.A.* 32:529 (May 1) 1945.

5. Schuessler, C. F.; Fairchild, J. M. and Stransky, I. M., Penicillin in the Treatment of Vincent's Infection. *J.A.D.A.* 32:551 (May 1) 1945.

6. Stern, Leo, A Preliminary Report on Penicillin in Dentistry. *Ann. Dent.* 3:1 (June) 1944.

7. Stern, Leo, Treatment of Acute and Chronic Infections of the Jaws With Antibiotics. *New York J. Den.* 15:225 (June-July) 1945.

8. Strock, A. E., Relationship Between Gingivitis and Penicillin Administration. *J.A.D.A.* 31:1235 (September) 1944.

Table 1.—Procedure and results in oral treatment of patients with penicillin, and of controls

	Group I	Group II	Group III
Procedure	(days)	(days)	(days)
Penicillin	1, 2, 3, 4, 5, 6	4, 5, 6, 7, 8, 9	None
Placebo	None	1, 2, 3	1, 2, 3, 4, 5, 6, 7, 8, 9
Scaling	4, 5	7, 8	7, 8
Bacterial study	Daily	Daily	Daily
Photographs	1 6	1, 4, 7, 9	1, 4, 7, 9
Results			
Complete subjective relief	3	5, 6	8, 9
Day spirochetes and fusiforms decreased	2, 3, 4	5, 6, 7	8

plication and by intramuscular injections with beneficial results.

MacGregor and Long[9] directed that penicillin pastilles should be dissolved in the mouth continuously.

Rosenthal[10] made topical applications and injected the penicillin into pockets and crevices in the mouth to ensure adequate coverage of the areas involved. He noted considerable relief of symptoms based on the treatment with penicillin, but suggested that dental defects and irritants be removed after the subsidence of acute symptoms.

For a more comprehensive review of the literature the reader is referred to a recent paper by Rosebury.[11]

Preceding our comprehensive controlled experiment, a pilot study was made of 16 patients at the School of Dental and Oral Surgery, Columbia University, with clinical signs of Vincent's infection. The first 5 patients were given the penicillin tablets at the rate of one every hour for twelve hours daily over a period of from three to six days (300,000 Oxford units a day). On the strength of clinical examination only, this dose was adjudged therapeutically ineffective although it was found to be free from toxicity. The remaining 11 patients, as well as 1 patient in the initial group, received a dosage arbitrarily doubled, or two tablets every hour for twelve hours daily over a period of from three to six days (600,000 Oxford units a day). Daily observation during the course of the latter treatment disclosed definite alleviation of symptoms with no apparent toxic effects. The penicillin employed in this preliminary series and the method of its ingestion are the same as described in the study proper.

Methods

Eleven cases of Vincent's infection taken in the order of their appearance during August, September and October, 1945, at the dental diagnostic clinic, Columbia University, constitute the group reported here (Table 1). Patients were advised of the diagnosis, but were not informed of the nature of medication they were receiving during the course of experimentation.

The penicillin used in this study was taken orally (swallowed immediately) at the rate of two tablets every waking hour for a minimum of twelve hours daily (600,000 Oxford units). Each tablet contained 25,000 Oxford units of penicillin sodium, buffered by aluminum hydroxide, calcium carbonate and magnesium oxide. Placebo treatment for control pur-

9. MacGregor, A. B. and Long, D. A., Use of Penicillin Pastilles in Oral Infection; Preliminary Report. *Brit. M. J.* 2:686 (November 25) 1944.

10. Rosenthal, S. L., Treatment of Fusospirochetal and Streptococcal Infections by Topical Application of Penicillin. *Am. J. Orth. & Oral Surg.* 31:690 (November) 1945.

11. Rosebury, T., Recent Developments in Fusospirochetal and Related Infections. *J. Periodont.* 17: 121 (July) 1946.

poses consisted of gelatin capsules containing 5 grains of pure lactose sugar, prescribed two per hour during the waking hours, paralleling the procedure with penicillin. Group 1 (2 patients) received treatment by penicillin for six days without placebo. Group 2 (6 patients) received placebo the first three days followed by six days of treatment with penicillin. Group 3 (3 patients) received placebo capsules only for nine days.

A preliminary coronal scaling was given on the fourth day to the patients represented in Group 1 and on the seventh day to those represented in Groups 2 and 3 and was followed by a final coronal scaling on the succeeding day when the teeth were polished. Deep subgingival curettage was not attempted.

The patients were examined daily and bacteriologic studies were made. Surface material and material removed from a gingival crevice were studied by dark field and gentian violet stained smears. Repeat samples were taken from approximately the same regions.

On the first visit data were recorded concerning age, sex, subjective oral symptoms, duration of the oral lesions, pain and other pertinent factors relating to previous examinations and treatment. In addition, notes were made on the extent and condition of the inflamed gingivae, the presence of a pseudomembrane, swollen and blunted interdental papillae, foul odor, hemorrhage, ulcerations, tartar, other irritating factors and oral hygiene.

Photographs were taken on colored films on the first, fourth, seventh and ninth day by a standardized technic.

Since toothbrushing was painful and hemorrhage-provoking, it was discontinued during the period of observation. Patients were also instructed to abandon all other forms of treatment.

Treatment Note

In comparing the oral route of administration with the parenteral, it is known that the former is more wasteful. This economic deficiency is, however, counterbalanced by the obvious advantages of simplicity and convenience.

Results

In the study of each case, initial bacteriologic evidence was noted of a flora consistent with that usually found in Vincent's infection. After the placebo administration, there was no apparent amelioration of subjective or objective symptoms; neither was there evidence of improvement in oral cleanliness or change in bacterial numbers.

Penicillin therapy represented in Group 1 resulted in complete relief from pain, hemorrhage, metallic taste and malaise on the third day. No subjective symptoms remained or occurred during the course of observation. On this day also, necrosis, pseudomembrane and mouth odor showed reduction and the gingival inflammation was markedly decreased. The pain brought on by the scaling operation, which is normally severe, proved negligible. On the day after the second scaling, all the objective symptoms had ceased to exist with the exception of the blunted interdental papillae. The latter showed evidences of healing. Prior to the initial scaling, both spirochete and fusiform elements had dropped sharply, the spirochetes dropping from 4+ to 1+. Other bacteria were reduced in number also. After the scaling, the oral flora showed further reduction.

The same clinical and bacteriologic pattern was noted in the Group 2 results.

In Group 3 (the control series receiving no penicillin), the study showed that preliminary scaling on the seventh day was extremely painful, although subjective and objective relief resulted. After the final scaling the pain, hemorrhage and metallic taste, foul odor, necrosis, pseudomembrane and inflammation diminished further. This last scaling on the eighth day aroused more pain than the same operation in the penicillin-treated groups, but it was noticeably less un-

comfortable than the initial scaling. On the ninth day the general improvement was found to be comparable to that observed in the two experimental groups except that the healing process seemed less advanced. The numbers of spirochetes, fusiform bacilli and other bacteria were reduced to a level comparable with those seen after the treatment by penicillin on the ninth day in Group 2 and the sixth day in Group 1 (Table 2). Colored films were used to verify the clinical observations.

A case history with experimental procedure (Group 2, Case 4) in a married white man, aged 29, is cited as typical. The oral condition was noted seven days previous to the visit to the clinic. The patient complained of being tired, irritable and unable to work. Oral hygiene was lacking. Mouth odor and unpleasant taste were noted. A pseudomembrane, an ulceration and a necrotic condition were present about most of the teeth. The lesions were extensive, but no treatment had been administered. Pain and spontaneous bleeding were present. The patient said that he had not been brushing his teeth. The symptoms were characteristic of Vincent's infection.

Experimental Procedure

On the first day a photograph was taken, a visual examination was made and the history of the case established. Typical Vincent's flora was revealed by bacteriologic study. Placebo treatment was begun and continued through the second and third days without apparent change. Treatment by penicillin was started on the fourth day. Slight improvement was noted clinically and bacteriologically on the fifth day. Marked improvement was noted on the sixth day with the gums no longer bleeding. Ulceration, redness and inflammation subsided and pseudomembrane was absent. Complete symptomatic relief with absence of pain was reported for the first time. Continued improvement was noted on the seventh day at which time photographs were taken. Preliminary coronal scaling was performed. Continued improvement was noted on the eighth day and coronal scaling and polishing were completed. The gingivae appeared almost normal on the ninth day with no systemic ill effects apparent. A final photograph was taken. The bacteriologic study of the smears taken from this case revealed typical flora of Vincent's infection on the first day. The spirochetes identified as Treponema microdentium, Treponema macrodentium, Treponema vincenti, Spirochaeta buccalis, fusiform bacilli, cocci and vibrios were found in large numbers. Other normal bacterial organisms of the mouth such as rods and filaments were present. No change was noted on the second, third and fourth days. Spirochetes dropped in number somewhat on the fifth day, the other bacteria remaining constant. Both spirochetes and fusiforms were greatly diminished in number on the sixth day and were almost extinct on the seventh and eighth days. Final smears and dark fields showed no spirochetes, few fusiforms, and other organisms in normal numbers and ratios. Figures 1 and 2 show photomicrographs of typical fields taken from stained smears on the first, fourth, seventh and ninth days.

Discussion

Each tablet had a penicillin assay standardized at 25,000 Oxford units. The blood concentrations after a single dose of 120,000 units of oral penicillin are stated by the manufacturer to be as follows:

Time interval	Concentration per 100 cc. serum
After 30 minutes	10 Oxford units
After 1 hour	5 Oxford units
After 2 hours	Less than 1 unit

Meads, Ory and Finland[12] recently

12. Meads, M.; Ory, E. M. and Finland, M. *Science* 103:678 (July) 1946

Table 2.—Bacteriologic and other data on 8 cases of Vincent's infection* treated with penicillin by oral ingestion and on 3 control cases

Group	Case No.	DAY	Dark Field Smear	1	2	3	4	5	6	7	8	9
				Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†	Spirochetes Fusiforms Vibrios Cocci Other†
				Penicillin			Penicillin and scaling		Penicillin			
I	1	Df		4 3 3 2 4	3 3 2 4 3	2 2 2 3 2	1 1 2 4 3	0 1 2 4 3	0 0 1 2 3			
		Sm		3 3 3 3 0	3 3 2 2 3	2 2 2 2 4	1 1 2 3 3	0 1 2 2 3	0 0 1 2 3			
	2	Df		4 2 2 4 1	3 2 2 4 1	1 1 1 2 2	1 2 1 2 4	0 1 2 3 4	0 0 1 3 4			
		Sm		3 2 2 3 2	3 2 2 3 2	1 2 1 3 2	1 2 1 2 3	0 1 1 2 3	0 0 1 3 3			
				Placebo			Penicillin		Penicillin			
II	3	Df		4 2 2 3 3	3 2 2 2 3	3 2 2 3 3	4 2 2 3 3	2 2 1 3 4	1 1 1 4 3	1 2 1 2 3	0 1 1 3 3	0 0 1 4 3
		Sm		4 3 2 3 3	4 2 2 3 3	3 2 2 3 2	4 2 2 3 2	2 2 1 3 3	1 2 2 3 2	1 2 1 2 3	0 1 1 2 2	0 1 1 2 2
	4	Df		4 4 2 4 2	4 3 2 4 2	4 3 2 4 2	4 2 0 4 4	4 2 1 4 4	2 2 1 4 3	1 0 1 3 3	1 1 1 3 3	0 0 1 0 2
		Sm		4 3 2 4 4	4 4 2 4 4	4 4 2 4 4	4 3 2 4 4	3 3 2 2 3	2 2 2 2 3	1 1 1 3 4	1 2 1 2 2	0 1 2 2 2
	5	Df		3 3 1 3 3	3 3 1 4 3	3 4 1 4 3	4 4 1 4 3	3 3 1 3 3	1 2 1 4 3	0 1 1 3 3	0 1 1 3 0	0 0 1 3 2
		Sm		3 2 2 4 2	3 2 2 4 2	3 2 2 4 3	4 4 2 4 3	3 3 2 2 3	1 2 1 2 3	0 1 1 3 2	0 1 1 2 2	0 1 1 2 2
	6	Df		3 2 2 3 2	3 2 2 3 2	3 2 2 3 3	3 2 1 1 3	1 1 0 1 3	1-1 0 1 3	1 1 1 2 3	0 1 1 3 2	0 1 0 3 1
		Sm		3 3 2 3 2	3 2 1 2 3	2 2 1 2 4	2 2 1 1 3	1 0 0 1 3	1 0 0 1 3	0 1 1 2 3	0 1 1 1 2	0 1 0 1 1
	7	Df		4 3 1 3 1	4 3 1 4 1	3 2 1 4 2	3 2 1 4 2	2 2 1 3 2	0 1 1 4 2	1 2 1 3 1	0 1 1 3 0	0 1 1 2 3
		Sm		3 3 2 4 4	4 3 2 3 4	3 3 3 3 3	3 2 3 3 3	2 2 1 3 2	1 2 1 1 2	0 2 1 2 3	0 1 1 2 4	0 1 1 3 2
	8	Df		4 2 1 3 4	4 2 1 3 4	4 3 1 3 2	3 2 1 4 2	2 2 2 3 3	1 2 1 3 2	1 0 1 2 3	0 0 1 3 2	0 0 1 3 2
		Sm		3 2 1 2 3	3 4 1 3 2	3 4 1 3 2	3 2 1 3 2	2 2 2 2 3	1 2 1 2 2	1 1 1 3 4	1 1 1 2 2	0 1 1 2 3
				Placebo								
III	9	Df		3 2 1 3 2	3 2 1 3 1	3 2 1 3 1	3 2 1 2 2	3 2 1 3 2	3 2 1 3 2	3 2 1 3 2	1 1 1 4 2	0 0 1 3 2
		Sm		2 2 1 3 2	2 2 1 3 1	4 2 1 4 1	3 2 1 3 2	3 2 1 3 2	3 2 1 3 2	3 2 1 3 2	1 2 1 4 2	0 1 1 2 1
	10	Df		4 3 2 3 1	4 3 2 3 3	4 2 0 3 3	4 2 1 3 4	4 2 1 4 4	4 1 1 3 3	3 2 2 4 1	1 2 2 3 2	0 1 1 2 1
		Sm		3 3 2 3 4	3 3 2 3 4	3 3 0 3 4	3 3 2 4 4	3 3 2 4 4	3 2 1 4 4	3 2 2 4 1	1 2 2 3 2	0 1 1 3 2
	11	Df		3 2 1 3 3	3 2 1 4 2	3 2 1 4 2	3 2 1 4 2	3 2 1 4 3	3 2 0 4 3	3 2 2 4 3	1 2 1 2 1	0 1 1 2 3
		Sm		2 2 1 2 3	3 3 1 2 2	3 3 1 2 1	2 3 1 4 1	3 2 1 2 2	3 2 0 1 2	3 2 0 1 2	1 1 1 2 2	0 1 1 3 1

Df-Dark Field; Sm-Smear; 4, very abundant; 3, moderately numerous; 2, scanty; 1, rare; 0, absent

* The effective mixture constituting the Vincent's flora includes a spirochete Treponema microdentium,[a] fusiform bacillus, a vibrio and an anaerobic streptococcus.—Rosebury, T.: The Etiology of Vincent's Infection, in *Dental Science and Dental Art*. Edited by Gordon, S. M., Philadelphia; Lea and Febiger, 1938. p. 436.

† Includes short rod, long rods, thick rods, thin rods, filaments, spirillum

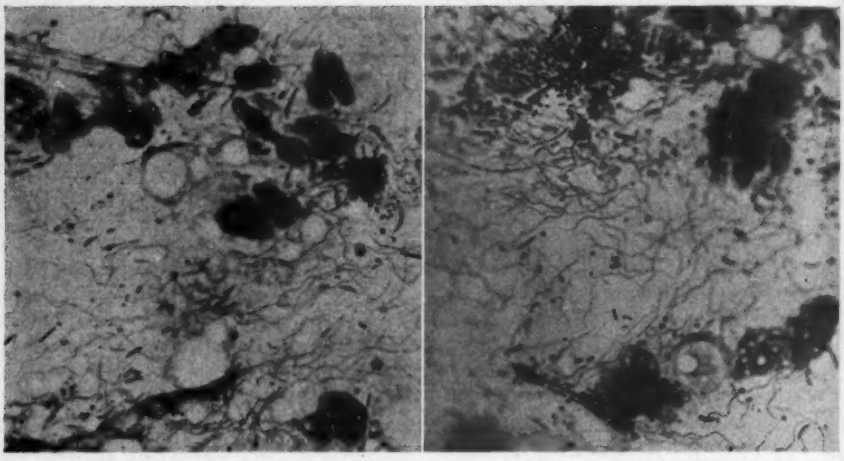


Fig. 1.—Left: A typical field from a bacteriologic smear taken on the first day. Note the large numbers of spirochetes and fusiform bacilli (× 1500). Right: A typical field from a smear taken on the fourth day (the day the administration of penicillin was started). The numbers of spirochetes and fusiform bacilli are as great as in Figure 1, left (× 1500)

reported that 90,000 Oxford units of penicillin, administered orally in tablet form, produced peak serum levels of 11 units per 100 cc. serum at the end of a half hour, 6 units per 100 cc. at the end of an hour and steadily declining levels thereafter. Less than 2 units per 100 cc. serum were found after two hours. Our

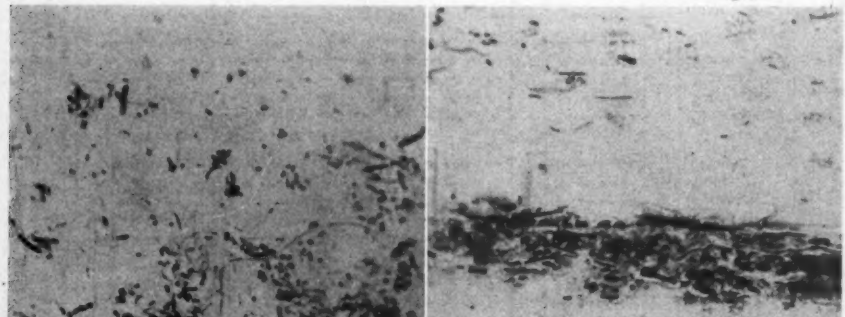


Fig. 2.—Left: A typical field from a smear taken on the seventh day (after three days of penicillin medication). Scaling had not been performed yet. Note the reduced numbers of spirochetes and fusiform bacilli (× 1500). Right: A typical field from a smear taken on the ninth day, after six days of penicillin medication and both scalings. Note the absence of spirochetes and the great reduction in number of fusiform bacilli (× 1500)

own serum level determinations substantially agreed with those of the aforementioned authors.

Kolmer[2] reported that blood concentrations of penicillin of 2 Oxford units per 100 cc. of serum are considered minimal effective levels.

McDermott, Bunn, Benoit, DuBois and Haynes[13] found that blood concentrations of penicillin (administered orally) were comparable to blood concentrations from intramuscular injections if five times the dose were given. There is a wide individual variation so that larger amounts may be effectively absorbed orally. The exact mechanism by which penicillin acts is not known. It probably inhibits some stage of cellular division, thereby preventing the numerical increase of the organism.[14] Bigger[15] reported that the susceptible bacteria are killed as they are ready to divide.

Penicillin is unique among the antibiotics in its almost complete lack of serious toxic complications in therapeutic doses. Enormous amounts of the drug have been given with slight manifestation of toxicity. Those reactions which were noted may have been caused by impurities.[2]

13. McDermott, W.; Bunn, P. A.; Benoit, M.; DuBois, R., and Haynes, W., Oral Penicillin. *Science* 101:228 (March 2) 1945.
14. Oxford, A. E., On Chemical Reactions Occurring Between Certain Substances Which Inhibit Bacterial Growth and Constituents of Bacteriological Media. *Biochem. J.* 36:438 (June) 1942.
15. Bigger, J. W., Treatment of Staphylococcal Infections With Penicillin by Intermittent Sterilization. *Lancet.* 2:497 (October 14) 1944.

Summary and Conclusions

1. Orally administered penicillin was effective in controlling Vincent's infection of the gingivae in this series of 8 cases when compared with the 3 controls.

2. The spirochetes and fusiform bacteria were greatly reduced in numbers on the surface and in the gingival crevices early in the treatment period and only a few were seen by the end of the sixth day.

3. The treatment of Vincent's infection by means of orally ingested penicillin plus scaling of the teeth had certain advantages over the latter method alone. These were as follows: The subjective symptoms were more quickly dissipated; scaling without pain was possible early in the treatment; septic symptoms after scaling were absent; the healing process appeared to be aided materially.—*630 West 168th Street.*

Health Insurance Plan for Greater New York.—In 1946 the Rockefeller Foundation underwrote to the extent of $250,000 the Health Insurance Plan for Greater New York. This project, known as the HIP, is preparing to conduct a program of voluntary health insurance in the New York City area for employed persons earning less than $5,000 a year, together with their dependents. Although the provision may be later modified, enrollment is confined to employee groups, with employers contributing at least 50 per cent to cover the employees of their companies. At the moment the HIP is one of the most comprehensive plans for medical service in the country, providing preventive, diagnostic and therapeutic aid which includes laboratory work, X-ray, physical therapy, hospitalization and visiting nurse service at home. The participation of the City of New York and of the United Nations, which have undertaken to join the plan for the benefit of their employees, immediately guarantees that the program will start on a large and representative scale. The presence of several first-class medical schools and teaching hospitals in the New York area offers the opportunity for integrating medical education with a thoroughly modern plan for medical care.—*Raymond B. Fosdick, The Rockefeller Foundation: A Review for 1946. New York: Rockefeller Foundation, pp. 17-18.*

PARTIAL DENTURE PROSTHESIS FOR WAR INJURIES

Louis Emory, D.D.S., El Paso, Texas

THE design and maintenance of partial dentures for patients that have received maxillofacial injuries continues to be a problem for the dental profession. As these men are released from army and navy hospitals it becomes apparent that an enormous task remains to test the ingenuity of the prosthodontists. Each of these cases differs so greatly from all others that general statements and a comparison of results have not been possible. It has been necessary to delay reports until more definite conclusions could be obtained. Reports of the prosthodontic treatment for maxillofacial injuries are noticeably absent from the dental literature and the surgical aspects have received most of the attention.

The time has arrived to compare experiences, and the purpose of this paper is to discuss the partial dentures for those patients that have received maxillofacial injuries. It is possible that this discussion may clarify and explain some of the difficulties which have been encountered and thus enable more dentists to continue the treatment of these patients. The patients have been concerned about their future treatments and each one expresses the hope that he will be furnished dental attention after separation.

Maxillofacial Partial Dentures

The discussion will be limited to those patients who have lost substance in either maxilla or mandible or both and who have required extensive surgical reconstruction. These patients have received numerous plastic operations, and bone grafts have been necessary. An attempt is always made to reconstruct the maxillary and mandibular ridge areas in such a manner that dentures are possible. However, when there is a loss of tissue, which must be replaced by means of a graft, the construction of a satisfactory denture is questionable at first examination. Close cooperation between the plastic surgeon and the prosthodontist is essential to produce denture-bearing areas that can permit the design and construction of appliances that are stable, retentive and functional.

Maxillofacial partial dentures present numerous problems. Each case possesses its peculiarities and demands some improvision in denture design. Simplicity is essential, and a careful consideration of the fundamental principles established for routine denture construction is necessary to obtain the desired results. The technical planning and designing will meet with success only if established and accepted methods are followed faithfully. Compromise methods will be found lacking in some detail, and only a maximum effort to meet the situation will produce appliances that can be considered definitive dentures for the present stage of treatment.

The function of routine dentures is to reestablish mastication, to restore esthetic appearance and to offer comfortable wear, whereas maxillofacial dentures must fill bone and soft tissue defects,

Presented as a clinical demonstration to the El Paso Texas District Dental Society, the dental officers of Fort Bliss, Biggs Field and William Beaumont General Hospital at William Beaumont General Hospital, El Paso, Texas, February 11, 1947.

Major (DC) U.S.A., Chief of Prosthetic Section, William Beaumont General Hospital.

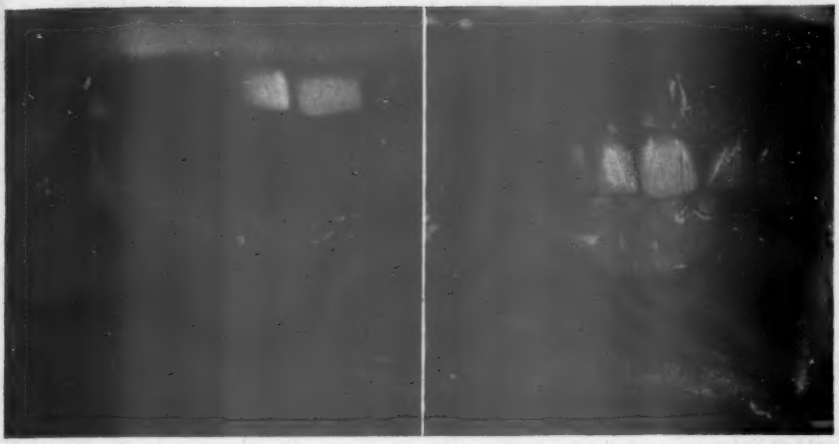


Fig. 1.—Left: Intra-oral epithelial graft for a sulcus extension. Right: Partial denture used to maintain shape of sulcus

cover palatal perforations and restore contour to otherwise unsupported tissues, in addition to the ordinary requirements. This must be accomplished over denture-bearing areas that are deficient and irregular with the remaining teeth occupying extremely abnormal positions.

Extensive cooperation is required from these patients and this has been obtained in most instances. Patients that have been without dentures for a long period of time become accustomed to this situation and may prefer to forego the necessary effort required to manipulate these appliances. It is difficult to obtain cooperation from patients who have had several unfortunate results with bone grafts or other surgical operations and are impatient with the necessary prolonged type of treatment.

Interim Dentures for Surgical Scaffolding

Some means of mastication should be supplied as soon as possible to aid in restoring muscular coordination and to maintain facial expression. Therefore, these patients are considered for dentures long before most of the surgical procedure has been completed. Fortunately these men require several appliances such as stents, which act as temporary or interim dentures, and the patient develops some of the habits necessary to wear dentures. Cosmetic considerations are necessarily incorporated with the problem and the dentures function as a stent to maintain grafted sections of tissue in correct alinement. The restoration of obliterated buccal and labial sulci is necessary to permit more freedom in movement of the lips and cheeks. The flanges of the dentures give proper contour and support to these areas. Nearly all casualties of the maxillofacial type require operations to restore proper depth to the labial or buccal sulcus before dentures can be constructed. To obtain successful results careful planning and good judgment are necessary to determine the site for the incision in order to produce a neat and functional sulcus.

An intra-oral skin graft (Fig. 1) to reconstruct an obliterated sulcus is usually necessary for these severe casualties before dentures can be completed. The method described by Weiss[1] has been ac-

1. Weiss, L. R.: The Intra-Oral Skin Graft. *J.A.D.A.* 34:389 (March 15) 1947.

cepted and widely used at maxillofacial centers. Since this is a discussion of partial dentures, only those cases will be presented in which partial dentures are utilized in the operation on the sulcus. The procedure has been to construct a primary partial denture, which may be the final denture after an addition of a flange for the new sulcus. The patient is instructed to wear the denture for a trial period until assured that no great discomfort can be expected. The day before the operation, several holes are made in the flange area and a 14 gage brass wire is attached to form a loop. This serves to hold impression compound at the time of the operation. The compound is first added by the use of dry heat. After the incision has been made and the sulcus prepared surgically, the denture with the attached and softened compound is molded to fill the area completely. After the compound has been properly molded and chilled, it is glazed by the flame of an alcohol torch. The skin graft, large enough to cover the prepared sulcus, is obtained from an unaffected and hairless part of the body by means of a dermatome. This is attached to the compound form with a surgical adhesive and the denture is returned to its place in the mouth.

In about two weeks the denture is removed and cleansed thoroughly. Low-fusing impression wax is painted over the dried compound section, and the denture is reinserted and permitted to remain for at least five minutes. The patient is instructed to rinse his mouth with ice water. The denture is removed and invested in such a manner that the wax and compound can be eliminated and replaced with acrylic resin. All of this is completed in the shortest time possible, usually about four hours. In the meantime, a section of compound is molded to retain the shape of the sulcus to prevent contraction of the graft. The resulting denture is, in most instances, the final denture and requires only minor adjustments such as thinning of the flange in the operated area. There is usually an

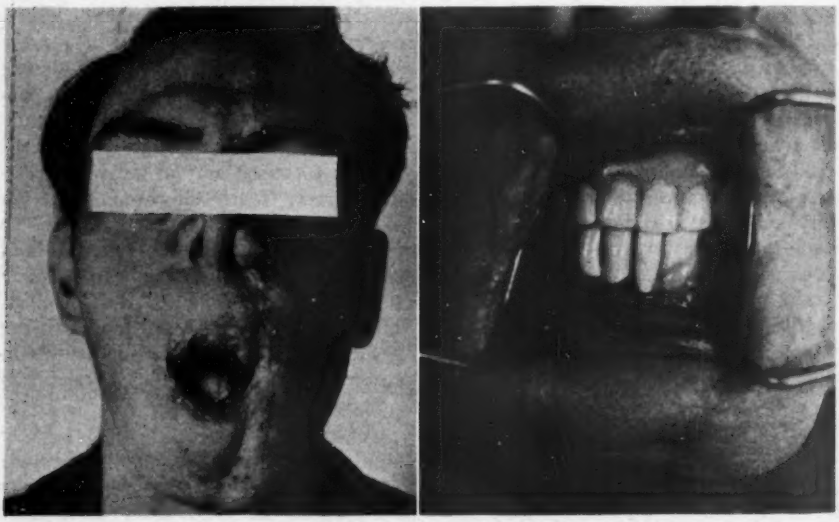


Fig. 2.—Left: Patient with extensive cheiloplasty showing small orifice through which impressions must be obtained. Right: Upper partial denture and lower fixed bridge selected to supply missing teeth

overcorrection in this area to permit some contraction of the graft, and the denture must be trimmed slightly.

Impression Technic

Impression-taking is the one phase that differs to a great extent from the procedures used in routine construction of partial dentures. Access is difficult during the earlier stages of treatment. This is especially true of patients undergoing cheiloplasty (Fig. 2). Modified trays are required that are large enough to cover the teeth and ridges. Consideration must be given to bone grafts, soft tissue grafts, palatal perforations, heavily scarred areas and extensions of the sulcus so that overextension and excessive pressure are eliminated. Obviously, the impression must be accomplished in several stages to assure adequate models of these mouths.

The technic is divided into three stages: (1) the preliminary impression, (2) the secondary impression and (3) the functional rebase impression. The alginate impression materials and compound are used for the preliminary impressions. These produce study models to be used for designing special trays which are modified in the mouth by the addition of compound for proper extension. These trays, which are loosefitting, are filled with one of the alginate materials to produce the secondary impression. The resulting model is used for designing the metal framework and for articulating the teeth. The accuracy of this model is dependent on the care taken with the design of the tray and its compound extensions. Because sectional impressions are used in many of these cases, trays are made in right and left halves. An indelible pencil line is drawn across the mid-line of the palate and is readily transferred to the alginate impression material. Impressions of each side are taken, so that they overlap slightly and receive the impression of the pencil line. This line is accentuated by a pencil tracing. The lines are transferred from the impressions to the models and aid in alining and assembling the completed models. An occlusal record helps to assure a true relation of the two halves. The functional rebase is necessary for all dentures constructed on sectional models and also is extremely helpful in other cases. This is considered a corrective rebase impression and permits a maximum denture-bearing area, which is as essential for these partial dentures as for complete dentures. The saddles can be comfortable only if they conform to the functional shape of the tissues rather than to the anatomic shape.[2] This is assured by using a wax rebasing technic, and a procedure similar to that suggested by Applegate[3] produces a functional impression of the subjacent tissues.

Design and Construction

The teachings and suggestions for partial denture design by Jones,[4] Schuyler,[5] Applegate[6] and Steffel[7] have made it possible for many dentists to arrive at a practical and successful approach to the problems of these difficult dentures. Because of the condition of these mouths, the designing of prosthetic appliances is a difficult task. All teeth are retained as long as possible, and as few as two are used to support these dentures. For practical purposes, clasp retained dentures designed for both tissue and tooth-bearing construction are always used. To permit proper distribution of stresses, as many teeth as possible are clasped. Rests, in-

2. Girardot, R. L., History and Development of Partial Denture Design. *J.A.D.A.* 28:1399 (September) 1941.

3. Applegate, O. C., The Cast Base Denture. *J.A.D.A.* 24:1280 (August) 1937.

4. Jones, R. R., Attachments for Partial Dentures and Abutments. *J.A.D.A.* 28:410 (March) 1941.

5. Schuyler, C. H., The Partial Denture as a Means of Stabilizing Abutment Teeth. *J.A.D.A.* 28:1121 (July) 1941.

6. Applegate, O. C., Use of the Paralleling Surveyor in Modern Partial Denture Design Construction. *J.A.D.A.* 27:1397 (September) 1940.

7. Steffel, V. L. Simplified Clasp Partial Dentures Designed for Maximum Function. *J.A.D.A.* 32: 1093 (September 1) 1945.

Fig. 3.—Models produced by sectional impressions. Maxillary model demonstrates a large perforation into the nasal cavity and right antrum

direct retainers, stress-breakers and rigid connectors are used whenever possible. All cases are of combination metal with acrylic saddles to permit frequent rebases and corrections of flange areas.

Most patients require several successive stages of dentures, depending on the extent of surgical treatment. In many instances, it is desirable to retain the models for records and for possible later reconstruction of the dentures. For this reason the wax rebase method, using shellac baseplates attached to the cast-gold framework with the teeth occluded in hard wax, is the preferred procedure. These baseplate saddles are molded to fit accurately and trimmed to the desired outline of the denture. The setup is next tried in the mouth. If the occlusion and appearance are acceptable, the dentures are removed and dried carefully. The baseplates are painted on the tissue bearing surfaces with impression wax and reinserted into the mouth for three and a half minutes. Several corrections are required before the interior is smooth and glossy. The patient is instructed to close normally, and eventually a functional impression is secured. The periphery should be rounded and should be about 3 mm. in thickness. The denture is invested and processed from this stage, and the original models are retained for later use. Zinc oxide and eugenol pastes can be used, but wax has greater flexibility for this purpose.

Discussion of Cases

The models in Figure 3 demonstrate a typical condition which requires an

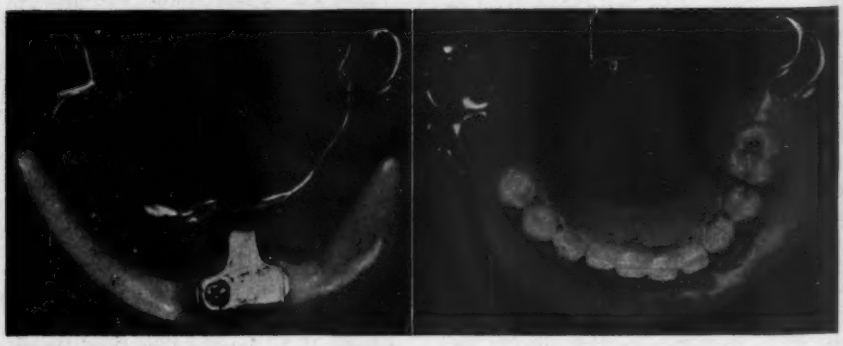


Fig. 4.—Stent and denture for mandibular reconstruction of condition indicated in Figure 3

operation of the sulcus in both arches before final dentures can be constructed. This patient is an example of a large group that has received injuries to both the maxilla and mandible. Reconstruction of the upper and lower lips is required, and the injury involves the anterior part of the mouth. There is loss of premaxillary bone and a large perforation into both the nasal cavity and the right antrum. Only the lower arch has been completed for a denture. An extensive stent was required to prepare a sulcus in the anterior, right molar and left molar regions. The stent had to be constructed in two sections to permit insertion. After the operation there was enough freedom of movement of the lower lip to allow for a denture in one unit (Fig. 4). The maxillary appliance, at present, consists of an obturator to aid in speech and to prevent food from passing up through the perforation. The maxillary denture eventually will be a full denture as the remaining molars have been condemned for removal.

Figure 5 shows the models and completed dentures for a patient who had a similar condition. The maxillary perforation has been closed by means of an abdominal tube graft, and the maxillary denture was designed for a tooth-bearing structure. Enough maxillary teeth are present to make handling of this condition a routine procedure. Care was taken to produce a good esthetic result. The lower denture is supported by one molar on each side and is an example of an extreme situation in which the cooperation of a willing patient aided in producing a completely satisfactory result under adverse conditions. These partial dentures

Fig. 5.—Left: Models of mouth after closure of palatal perforation for a patient with extensive injury to both arches. Right: Temporary partial dentures

Fig. 6.—Cast-gold frameworks designed to be final-type dentures for condition indicated in Figure 5

can be considered as intermediate types. A final type is under construction (Fig. 6).

Another common situation is demonstrated in Figure 7. The injury to both maxilla and mandible presents an unusual and difficult situation for dentures. The injury has been to one side of the face only and leaves the patient without upper and lower teeth on the injured side. All posterior and several anterior teeth are missing on the injured side, but the uninjured side is intact. It may be a coincidence but many of these patients have had almost perfect teeth in the uninjured half. This situation added to the difficulty in design for the perfect interdigitation did not permit room for the necessary clasps, and extensive preparation had to be accomplished to provide room for rests and clasps. Most of these patients require sulcus grafts and usually a mandibular bone graft. The soft tissues on the injured side are dependent on the two dentures for support to restore proper fullness. Thus the dentures are important for esthetic effect.

Both arches are not always involved in these severe cases. A number of injuries occur to the maxillary region in which the facial bones are involved. Figure 8 is an example of this group, and the models demonstrate the perfect lower arch and the injured maxillary arch which has only two molars remaining on the left side. The maxilla has been severely injured, and the premaxillary region destroyed. The perforation into the nasal cavity had to be closed by a large graft. The nasal and the superior labial areas must be reconstructed. Bone grafts are difficult or impossible in the premaxillary area because there is no favorable anchorage and only soft tissue grafts can be used to close the deficient areas. Thus the denture has only a soft tissue support in the anterior region and is unstable. These dentures serve to support badly damaged upper lips and act as an obturator many times when surgical closure has not been possible. A Boos type spring was selected to stabilize and aid the right side, but the patient has learned to manage the denture without any additional attachments. More stability will be possible after an operation to permit more freedom to the upper labial tissues.

Unilateral Mandibular Dentures

Mandibular injuries in which there is loss of bone substance fall into two large groups. One group has lost substance in the anterior region of the mandible. The dentures of these cases are the same as those discussed under the group in which both the maxilla and mandible have been injured in the anterior region. Figure 9 demonstrates the dentures for a more common mandibular injury. In this, one side of the jaw is involved. This appears to be one of the largest groups. These conditions follow a course similar to the combined maxillary and mandibular injuries. Most of them have required a bone graft in the molar or bicuspid region, and occasionally the ramus must be replaced. Some of the anterior region is usually

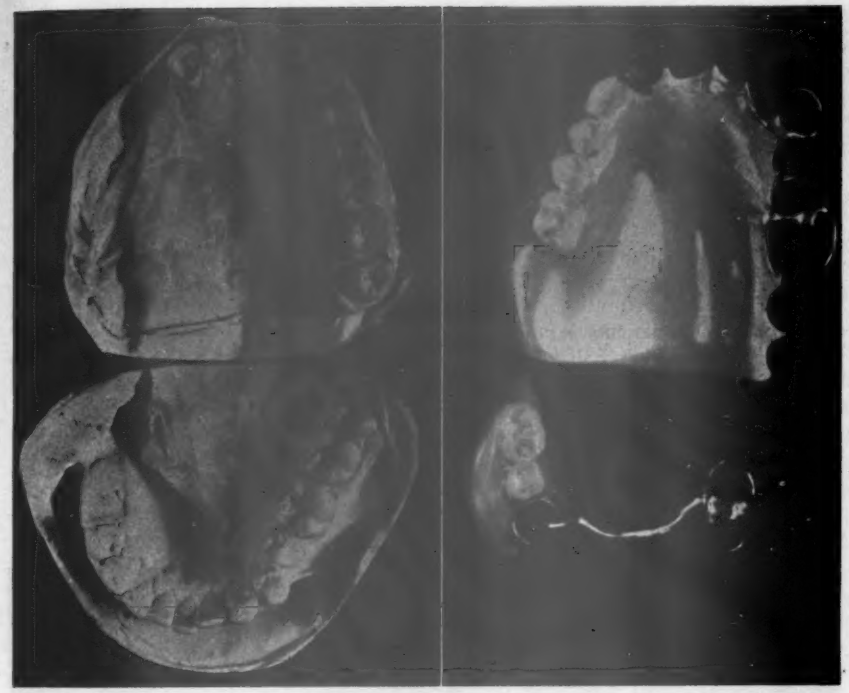


Fig. 7.—Models and dentures for a unilateral injury to both maxilla and mandible

involved, in which case the posterior teeth and possibly several anterior teeth remain on the other side to support a denture. A buccal and sometimes a labio-alveolar sulcus graft is required before satisfactory dentures are possible. Figure 1 is an example of this group. The denture has been used as a stent to support and maintain the grafted area. These dentures have proved to be functional and comfortable and require only a slight modification in their design and construction. Most of these dentures require a design in which a stress-breaker is incorporated. (Fig. 10).

Patients with unilateral saddle-type dentures have enough remaining teeth to permit mastication and are at first dependent on the denture only for its value as a stent for the sulcus graft. They soon realize the advantages of distributing the function over the entire arch and become dependent on the denture. These patients are aware of their situation and have had an explanation of the harmful results from elongation of the maxillary teeth on the injured side. The latter is one of the most unfortunate complications. Figure 1 is an example of a condition in which there is only enough room for a saddle, even after trimming of the mandibular ridge area.

Summary

An attempt has been made to discuss some of the problems in the making of partial dentures for patients with maxillofacial injuries. Such problems will not be settled finally with the completion of the first dentures since they will require important adjustments and reconstruc-

tions. Many of these men will require plastic surgery for years to come, and these operations will necessitate a change in denture design in most instances.

Among the large number of patients released from service, many complications are inevitable. Some of the factors that should be considered by those of the profession who will be called upon to treat these patients should be discussed briefly:

1. All palatal perforations should be checked. Those patients who received surgical treatment may have a recurrence of the opening. These patients will complain of fluid running into the nasal cavity. This should be expected in many instances, and dentists who have seen large numbers of these conditions understand the problem. Success in closure of these perforations is dependent on the amount of soft tissue and the blood supply. Dentures serve to protect many of these surgical closures and also act as obturators in those cases in which closure has not been possible.

2. Patients with bone grafts should be examined carefully for reassurance that a fibrous union is not present. The fibrous portion may become more evident after a more normal use is made of the jaws, once the patient is released from the hospital and is no longer on a soft diet. The dentures for these patients are unstable and may spring up as the teeth are brought into occlusion. This is an annoying situation, and a check with new roentgenograms will disclose any bony consolidation present.

3. Patients who have had the ramus

Fig. 8.—Models and dentures for a patient with extensive reconstruction in the premaxillary region

replaced with a graft have a false joint in the region of the temporomandibular articulation. It is certain that changes will take place. Several cases under observation have shown a tendency to favor a new relation and the occlusion of the remaining natural teeth is not indicative of the true centric relation. Muscular imbalance will eventually effect a change and attempt to produce a more harmonious alinement. Centric occlusion cannot be used as a starting point from which to determine the normal relation of the jaws for reproducing dentures in the edentulous area.

4. Closely allied to these cases is the large group of patients that have had bone grafts to the mandible in which the segments were alined by estimation. This procedure is done often when large numbers of teeth are missing. One or both of the condylar heads may not be repositioned to its true relation, and there could be a rotation on almost any position other than the original position. A prediction that possible manifestations of joint disturbances may result is not to be dismissed without some study and thought, as it is impossible to reposition fragments to the original relation in many of the conditions requiring bone grafts. It is true that at present these patients do not appear to have any complaints or symptoms, but from experiences with complaints arising from disturbances of the temporomandibular articulation it can be predicted that complications will arise. Therefore due consideration should be given to the balance of the denture as muscular imbalance produces strain on one side or the other.

From the number of patients with tem-

Fig. 9.—Unilateral, free-saddle type, mandibular partial denture. This type is one of the most frequently required for maxillofacial cases

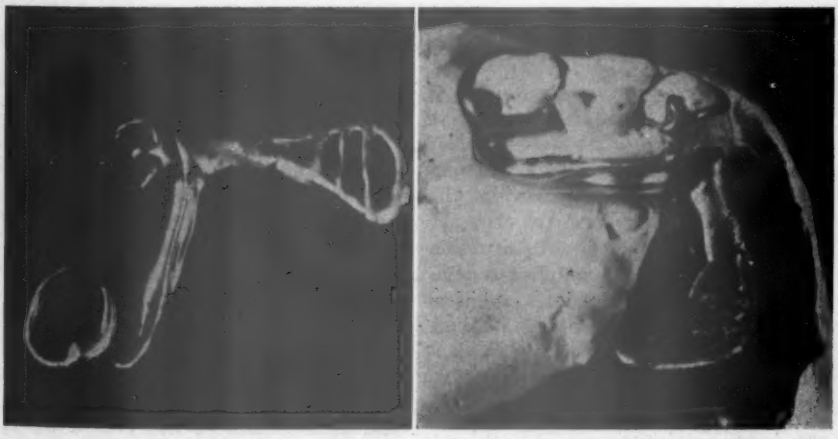


Fig. 10.—Left: A unilateral free-saddle type denture with a stress-breaker. Right: Gold framework attached to shellac base-tray to be used for functional rebase impression after teeth are occluded

poromandibular disturbances treated, in which the cause for the complaint is vague and yet definite discomfort or subluxation is present, it can be estimated that many of these maxillofacial conditions will follow a similar course. The complications will depend on the limits of accommodation present in the structures of the joint and the closely related structures.

5. When time permits, some orthodontic treatment may be attempted. Occlusal readjustment may be possible and a more normal alinement will permit finer results with dentures.

6. Many of these patients will lose the remaining supporting teeth eventually, and complete dentures will be necessary. It will be observed that many operations of the sulcus will be required. Many partial dentures are possible with sulci only faintly resembling normal ones, but complete dentures will require better situations. With careful planning, these patients will be able to tolerate complete dentures. From the number of satisfactory results observed, the loss of the few remaining teeth is regarded as a more favorable situation for dentures.

As each patient presents himself to the profession for evaluation and possible reconstruction of intra-oral appliances, a careful study of the above-mentioned points should be made, and good judgment should be used to eliminate any causes of discomfort. If any improvement is possible, corrections should be made to the previous design and eventually satisfaction will be attained. Such achievement is especially gratifying after one realizes that these dentures are a sign of approaching the end of a long and difficult period of treatment.—*William Beaumont General Hospital.*

PENICILLIN: NEW METHODS FOR ITS USE IN DENTISTRY

C. A. Scrivener, D.D.S., Ottawa, Kan., and C. W. Schantz,* D.D.S., Great Lakes, Ill.

MEDICAL literature is replete with enthusiastic reports relative to the merits of penicillin. An extensive review of the methods of administration of the drug shows that tentative conclusions have been drawn and empirical limitations already have been established. Although the uses of penicillin in dentistry have been given little consideration, the flood of material published in medical literature encourages interest in possible dental applications.

Currently reported uses of penicillin and the methods of its application recall the work which we conducted at the Naval Training Center in San Diego, Calif. We observed the mouths of 25 men undergoing treatment with penicillin for gonorrheal infections before treatment was started, during treatment and after treatment was completed, in an attempt to determine the effect of the treatment on caries susceptibility.

We found that, among this limited

The assertions and opinions expressed in this article are those of the authors and are not to be considered as reflecting the views of the Navy Department or the Navy at large.

*Captain (DC) USN; Senior Dental Officer, Naval Training Center.

number of cases, the systemic administration of 100,000 units of penicillin apparently had no effect on caries susceptibility but did have a definite inhibitory effect on the growth of Vincent's spirilla. Realizing that topical application of penicillin is effective as a bacteriostatic,[1-4] we attempted to apply the drug to the gingiva of patients having active Vincent's infection. The rapid solubility of penicillin in saliva proved difficult to control. Direct contact of the penicillin with diseased tissue for a certain varying period of time is necessary to produce desired bacteriostatic results.[2] Gelatin,[4] lozenges and ice cream[5] have been used as menstruums to aid in the retention of penicillin in the saliva, but their release of a controlled concentration of penicillin is limited, owing to the degree of solvency and of salivation. A search of medical literature produced discouraging information. J. S. Lockwood,[3] chief, Division of Surgery, Committee on Medical Research, Office of Scientific Research and Development, pointed out that "if an invasive infection develops, it can be best combated by systemic therapy since topically applied drugs will not come in contact with the deeply placed organisms." He drew the following conclusion:

A limiting factor in the practical usefulness of penicillin in the local treatment of these open infected wounds is the need for frequent reapplication of the solution. Eventually, it should be possible to include penicillin in an ointment which will slowly liberate it into wound fluids, thus obviating the necessity for frequent applications of the solution. However, none of the ointments yet described has been given sufficient clinical trial to justify an unqualified recommendation, and for the time being, the use of saline solutions of the drug is preferable. Penicillin powder, and solutions containing more than 2,000 units per cc. are likely to be irritating and painful, and there is no evidence that such concentrated preparations are more efficacious than the solutions here recommended.

1. Cipes, L. R., Penicillin in Dentistry. *D. Items Interest* 67:248 (March) 1945.
2. Craig, W. M., and others, Penicillin. *U. S. Nav. M. Bull.* 44:453 (March) 1945.
3. Lockwood, J. S., The Local Use of Penicillin. *Navy Dept. BuMed News Letter* 4:1 (December 8) 1944.
4. MacGregor, A. B., and Long, D. A., Use of Penicillin Pastilles in Oral Infections; Preliminary Report. *Brit. M. J.* 2:686 (November 25) 1944.
5. Nolan, R. A., Penicillin Administration for Mouth and Throat Infections. Naval Training Center, San Diego, Calif.
6. The Uses and Limitations of Penicillin. *J.A.M.A.* 127:937 (April 7) 1945.
7. Council on Dental Therapeutics, Penicillin and Related Preparations. *J.A.D.A.* 32:355 (March) 1945.

Search for Other Menstruums

These conclusions might lead one to believe that all hope for the use of penicillin in a form other than saline solutions has come to naught insofar as practical results are concerned. Such a conclusion, if substantiated, would indeed be a blow to dentistry. Saline solutions, because of rapid elimination by excessive salivation, could not be considered practicable for local oral treatment. Systemic treatment could never be a universally accepted method in dentistry because of the frequent injections required and the necessity for hospitalization of the patient. Ointments might be used, although this method is not practicable for oral use because of the incompatibility with saliva and the possible chemical change imparted by the vehicle. Penicillin powder, particularly the sodium salt,[2, 3, 6, 7] has produced slight irritations on surfaces to which it has been applied in its natural state, and the wastefulness involved and the lack of control in such a manner of application make this an impracticable method.

Being cognizant of the difficulty of using topical applications of penicillin in dental infections, we directed our effort toward finding a medium through which this soluble and labile substance could be applied, so that a bacteriostatic concentration of the drug could be maintained constantly at every point at which there are infecting organisms. Infections of major concern were acute and chronic local conditions, such as Vincent's infection, aphthae, traumatic ulcers, pericoronal infections and osteitis (dry socket).

Gum tragacanth was found to be

highly effective as a menstruum that would adhere to mucous surfaces. Commercial denture adhesive powders also proved to be desirable as a gum base because of their purity and adaptability. We have used concentrations varying from 50,000 units of penicillin in 2 gm. of denture adhesive powder to 25,000 units of penicillin in 10 gm. of denture adhesive powder. The minimum effective concentration of penicillin has not been established definitely. Indications are that the more dilute preparations are equally effective, and perhaps a lighter concentration will be more desirable. Sufficient concentration should be used to be effective and to guard against the development of a penicillin tolerance by the organisms.

Method of Treatment

Armamentarium.—Penicillin and denture adhesive powder or powdered gum tragacanth are required, together with a powder blower or atomizer and a sufficient number of one-half ounce screw-top bottles (which fit the head of the atomizer) to provide for storage of small amounts of the preparation in the refrigerator (see illustration).

Composition.—The concentration may be varied according to the needs of the case. One hundred thousand Oxford units of penicillin (calcium preferred) in 25 gm. of denture adhesive powder is a dependable mixture. The denture adhesive powder should be tested for sterility. Powdered penicillin should be added to the denture adhesive powder a little at a time and mixed thoroughly and uniformly on a dry, sterile glass slab. This amount will provide sufficient powder for fifty applications, with 2,000 Oxford units of penicillin as an average dose. Only enough powder for an estimated supply for one day should be placed in each bottle. The bottles should be stored in a dry, refrigerated atmosphere at 10 C. or lower.

A, powder blower assembly. This should not be placed in the refrigerator because moisture will condense in the aperture. B, one-half ounce airtight screw cap bottle for storing preparation in refrigerator. An estimated twenty-four hour supply only should be placed in the bottle. C, cheek retractors.

Application.—Superficial calculus, plaques, debris and pseudomembranes should be removed by careful instrumentation and by spraying with a solution of hydrogen peroxide. The mouth should be rinsed thoroughly with warm water. A thin film of the penicillin preparation should be applied with the powder blower or atomizer over the entire infected area. The application should be repeated in one minute to ensure complete and uniform coverage. The patient should be treated as described every four to six hours for a twenty-four hour period. A thorough scaling and polishing of the teeth should follow within two to four days, after which another application of the penicillin mixture should be administered to ensure complete elimination of the infection.

Results

Microscopic studies showed an absence of Vincent's spirilla and fusiform bacilli after four applications at approximately six-hour intervals over a period of twenty-four hours. Patients all reported relief of pain within one hour and an immediate reduction of gingival hemorrhage. The presence of an abnormal number of polymorphonuclear leukocytes in the smear taken after twenty-four hours may indicate chemical irritations; hence it is possible that a less concentrated mixture is desirable. Smears exam-

ined microscopically seventy-two hours to seven days after treatment indicated that Vincent's spirilla and fusiform bacilli were still not present. No toxic or irritating symptoms have been noted in the cases reviewed after treatment. This treatment has been used effectively in more than 1,000 cases.

The use of penicillin in the treatment of Vincent's infection was not suggested in a report on penicillin by the Council on Dental Therapeutics.[7]

The effect of this preparation is twofold. First, the prolonged contact of the penicillin with the infected area provides an ideal means to ensure bacteriostatic effect. Second, the jelly-like matrix provides a protection against mechanical irritation to inflamed membranes and does not prevent free drainage. The scope of application is not limited to the oral cavity. This method presents possibilities for successful application in other sites of infection, such as vaginal or rectal areas.

The routine use of penicillin lozenges should be severely condemned. Treatment in this manner frequently takes the patient away from the observation of the dentist. The result may be incomplete cure of the disease or the development of a tolerance to penicillin by the patient, thus rendering future treatment with penicillin ineffective. All patients treated with penicillin should be under professional observation during the entire course of treatment. The use of lozenges encourages the practice of self-medication. The method of application described herein is more effective, and its use keeps the patient under professional observation for the duration of the treatment.

Recently we have used penicillin in conjunction with gelatin and oxidized cellulose substances as a postoperative dressing in 350 cases of extraction. A piece of Gelfoam[8] about half the size of the socket is saturated with calcium penicillin solution containing approximately 1,000 units. The substance is introduced into the tooth socket immediately after the removal of the tooth and before possible contamination from the saliva. Bleeding is reduced to a minimum, owing to the nature of the Gelfoam, and postoperative pain in every case has been negligible. For patients with complicated impactions the material was sutured tightly into the socket. Only two cases of dry socket developed, and they were arrested promptly by a second treatment, similar to the first. Three patients required additional treatment for postoperative hemorrhage. In these cases the material had been displaced by the patient before the blood clot had become organized. On the basis of results in these 350 cases compared with an equal number of cases in which penicillin was not used, one of us is now using this form of treatment routinely after all extractions.

In 1945 Alexander Fleming, the discoverer of penicillin, said, "Penicillin is likely to be extremely successful in the mouth and respiratory tract. Nearly all the bacteria common in these regions are sensitive to penicillin; the only difficulty is to get the penicillin into contact with them. Two serious limitations of penicillin are its instability and rapid excretion."[8] Since it is now possible to overcome these two disadvantages, every dentist should familiarize himself with the virtues of penicillin. It is truly a miracle drug.—*Masonic Building.*

8. A product of the Upjohn Company, Kalamazoo, Mich.

THE Journal OF THE
AMERICAN DENTAL ASSOCIATION

NOVEMBER 1, 1947 • VOLUME 35 • NUMBER 9

LON W. MORREY, D.D.S., *Editor*

Published by the American Dental Association • 222 East Superior St. • Chicago 11, Ill.

EDITORIALS

THE SULFONAMIDE COMPOUNDS IN DENTAL PRACTICE

THE sulfonamide compounds, hailed as wonder drugs when first introduced to the medical world, recently have been assigned a more rational position in the pharmacopeia. Ten years of trial and error have demonstrated that the sulfonamides are valuable in the treatment of certain oral infections, although there are many oral conditions in which their benefit is questioned and others in which they are of no benefit at all.

Osterloh[1] pointed out that the sulfonamide drugs are effective against the alpha hemolytic streptococcus, nonhemolytic streptococcus, Staphylococcus aureus and Staphylococcus albus and therefore play an important role in the treatment of acute alveolar abscess, cellulitis and acute osteomyelitis. In his opinion, however, penicillin will replace the sulfonamides in the treatment of osteomyelitis.

The sulfonamides are used widely for topical application in the socket after tooth extraction and in the treatment of accessible localized regions of infection in and about the mouth. Krashen[2] believed that the postoperative use of sulfonamides in the tooth sockets should be discouraged because clinical studies have proved that the drug is actually detrimental to the healing of the bony socket in a great majority of cases. In Krashen's opinion, sulfanilamide acts as a foreign body when applied locally and consequently interferes with normal formation of the blood clot.

Ostrander and Kerr[3] concluded that the topical use of sulfonamides is advisable as a prophylactic measure in sockets in which severe trauma, extensive periapical disease or existing infection predisposes to postoperative infection, but that routine medication with sulfonamides after simple extractions is not necessary. Their studies

1. Osterloh, Joseph P., The Sulfonamides in Oral Medicine. *J. Oral Surg.* 3:60 (January) 1945.
2. Krashen, Avery S., A Preliminary Report on the Use of Sulfanilamide in the Average Extraction Case. *J.A.D.A.* 27:1199 (August) 1940.
3. Ostrander, F. D. and Kerr, D. A., Recent Trends in Use of Sulfonamides. *J.A.D.A.* 35:461 (October 1) 1947.

indicated that the sulfonamide powders are more desirable than sulfathiazole-glycerin ointment or an ointment of a sulfonamide and eugenol. They cautioned that when the sulfonamides are applied topically they should be used sparingly and in a form that will not harden or cake, as this causes delay in healing. They further advised that "minor oral infections should not be treated by systemic administrations of sulfonamides because of the potential dangers of producing serious toxic effects, sensitization and sulfonamide-resistant strains of organisms."

During the early months of the war the application of sulfonamides to all wounds was a routine procedure. This procedure was discontinued, however, on June 1, 1945, when the War Department issued a directive[4] to abandon "the practice of routine local application of crystalline sulfonamides to wounds as an emergency aid measure and prior to initial wound surgery."

Recently, the Council on Pharmacy and Chemistry of the American Medical Association[5] voted to delete from the 1947 edition of New and Nonofficial Remedies the discussion on the local use of the sulfonamides and to substitute the following statement: "Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infection or in treatment of infections of the skin or mucous membrane. The routine use of sulfonamides as topical applications in wounds, burns and in superficial infections is therefore to be discouraged."

It is evident that the sulfonamides are not miracle drugs and should be used with utmost caution. Since the sulfonamide compounds have a considerable degree of specificity in their bacterial action, care must be used in selecting the specific sulfonamide for the specific disease. The practice of treating routinely all extraction wounds with a sulfonamide dressing is inimical to the best interests of the patient.

4. *Accepted Dental Remedies.* Chicago: American Dental Association, 1947, p. 126.
5. Report of the Council on Pharmacy and Chemistry. *J.A.M.A.* 135:157 (September 20) 1947.

WANTED: A RATIONAL TREATMENT FOR PROCAINE HYDROCHLORIDE DERMATITIS

DERMATITIS caused by procaine hydrochloride has been an occupational hazard to dentists for the past thirty years, yet little is known regarding its cause and less has been done to discover a cure or a preventive.

Procaine was introduced in this country in 1912. It was not until several years later, however, that it was suspected of causing dermatitis. Mook,[1] in 1920, was among the first to report a case of a dentist with susceptibility to apothesine. In discussing the case he stated that procaine gave much the same reaction as apothesine when skin tests were applied. C. Guy Lane,[2] in 1921, reported three cases of procaine dermatitis occurring in dentists. His investigation was followed by several others which indicated that procaine, under certain conditions, would give rise to a

1. Mook, W. H., Skin Reactions in Apothesine and Quinine in Susceptible Persons. *Arch. Dermat. & Syph.* 1:651 (June) 1920.
2. Lane, C. G., Occupational Dermatitis in Dentists Susceptible to Procaine. *Arch. Dermat. & Syph.* 3:235 (March) 1921.

skin eruption in those who are hypersusceptible to the drug.

The disease usually first manifests itself by a slight itching on or between the fingers. The itching becomes more intense and is followed by an erythematous, scaly eruption with slight vesicles involving the sides and backs of the fingers. Serum exudes from the vesicles, dries and forms crusts. Eventually the crusted areas develop into fissures, particularly at the points of greatest flexion. In severe cases the nails may become discolored, irritated and fissured. As far as is known the disease has never proved fatal; nevertheless it is irritating and annoying and disfigures the hands and other affected parts of the body. In some instances the disease has forced dentists to discontinue practice until their hands have healed, or to cease using a local anesthetic, much to the discomfort of their patients.

It has been pointed out that few cases of procaine dermatitis have been reported among physicians. This may be due to the fact that physicians do not come in contact with the irritating chemicals as often as do dentists. Most dentists handle procaine with ungloved hands and consequently acquire hypersensitivity by frequent contact with the solution.

It is not known why some dentists develop a dermatitis from procaine while others remain unaffected. Most writers attribute this phenomenon to a hypersensitiveness on the part of those affected, as it is known that constitutional peculiarities will render the operation of the mildest medicine poisonous.

Bronfenbrenner[3] stated that "the contact dermatitis type of response to nonantigenic substances need not be considered as a phenomenon apart from ordinary allergy. . . . Whatever the actual mechanism responsible for the sensitization with initially nonantigenic substances may be, it appears that, in the final analysis, in human beings as well as in animals the retention of chemicals in the tissues for a more or less prolonged period, as in the case of intracutaneous introduction, increases the likelihood of sensitization. Apparently, local irritation with the following inflammatory tissue changes facilitates the formation of conjugates."

By 1926 a number of empirical formulas were offered as a cure for the condition. Most of these so-called remedies consisted of bland, nonirritating ointments or lotions, many of which are still being used with indifferent success.

The use of heavy rubber gloves while making the injection is recommended by some dentists who are susceptible to the solution.

One of the most recent scientific studies of epidermal allergy to procaine was conducted in 1945 by Rothman, Orland and Flesch.[4] They attempted to ascertain whether the allergic response is obtained with procaine alone or whether related compounds or single parts of the procaine molecules have a similar effect. Their studies indicated that group specificity in epidermal hypersensitiveness, when there are no antibodies in the serum, follows similar patterns as do the serologic immune reactions. If these findings are substantiated by other researchers, dermatologists may be able to advise a dentist which group of local anesthetics he should use and which group he should avoid.

Failure to develop a preventive or cure for procaine dermatitis is largely the result of indifference. Dentists who are subject to the disease are invited to write to the Council on Dental Therapeutics of the American Dental Association. If enough interest is aroused in the subject, it may prove a challenge to the profession to discover a rational treatment for the disease.

3. Bronfenbrenner, J., Is the Hypersensitiveness to Chemical and Physical Agents Allergic in Nature? *J. Allergy* 14:105 (January) 1943.
4. Rothman, S.; Orland, F. S., and Flesch, P., Group Specificity of Epidermal Allergy to Procaine in Man. *J. Invest. Dermat.* 6:191 (June) 1945.

FURTHER EXCERPTS FROM THE MINUTES OF THE HOUSE OF DELEGATES, EIGHTY-EIGHTH ANNUAL SESSION

FOLLOWING are further excerpts from the minutes of the meetings of the House of Delegates held during the eighty-eighth session, August 4-8, at Boston. Other excerpts from the minutes were published in the October 15 issue of THE JOURNAL, pages 573-579. A summary of the actions of the House appeared in the September 1 issue, pages 362-364.

President's Address to House of Delegates

The president's address was published in full in the September 1, 1947 issue of THE JOURNAL, pages 309-323. Action taken by the House of Delegates on the president's recommendations was reported in the September 1 issue of THE JOURNAL, page 363.

Increased Services to Constituent Societies

The Reference Committee on Reports of Officers reported favorably on the recommendation of the secretary that the House of Delegates approve a program for the extension of increased services to constituent societies. On motion of the reference committee, the recommendation was adopted with the stipulation that the mechanics of operation of the program be left to the Committee on Budget and Finance of the Board of Trustees.

Reference Committee on Constitution and Bylaws

The following report was presented for the Reference Committee on Constitution and Bylaws by Willard S. Bell, New York:

Revision of Constitution and Bylaws.—The recommendation of the standing Committee on Constitution and Bylaws that another year of study be given to the proposed revision of the Association's Constitution and Bylaws was approved by the reference committee and adopted by the House of Delegates.

Resolution of Southern California State Dental Association.—The recommendation that a special committee of three members be appointed by the president to study the resolution on a reduction in size of the House of Delegates was approved with the stipulation that this committee report at the 1948 annual meeting.

Resolution of Dental Society of the State of New York.—This resolution proposed various changes in the procedure and size of the House of Delegates. A recommendation of the reference committee to refer this to the special committee of three was approved.

Amendment of Constitution to Increase Dues.—The reference committee concurred in the recommendation of the Relief Commission, the Board of Trustees and the standing Committee on Constitution and Bylaws that the amendment to the Constitution proposing an increase in dues of $1, earmarked for relief purposes, be disapproved. John S. Owens, chairman, Relief Commission, reported that the recommendation did not originate with the Relief Commission but had been drawn as a result of a recommendation in President Walter H. Scherer's annual address in 1946. The report of the reference committee was approved on a show of hands.

Supplemental Report.—The following supplemental report was made by the Reference Committee on Constitution and Bylaws through Willard S. Bell, New York, chairman.

Increase in Pan-American Dues.—Upon reconsideration of the recommendation of the Committee on Membership to increase dues for Pan-American members to $10 annually, the reference committee moved that the increase be authorized. The motion was seconded and carried.

Resolution of Dental Society of State of New York on Increase of Annual Dues.—The reference committee reported its concurrence with the resolution of the Dental Society of the State of New York to increase membership dues in the American Dental Association by $6 annually.

On proper vote, the recommendation of the reference committee was adopted.

It was moved by W. O. Talbot, Texas, that every member of the American Dental Association be assessed $2 per capita to aid in relieving the present budgetary emergency. The motion was seconded. In the general discussion that followed, there was general opposition to this method of securing funds. There was also the general suggestion that the Association operate as economically as possible during the coming year in order to establish definitely what the fiscal needs of the Association would be in order to work effectively. Upon vote, the motion for per capita assessment was lost.

Standing Committee on Dental Journalism.—The reference committee reported on a request from the Conference of Dental Editors asking for the establishment of a standing committee on dental journalism. The recommendation of the reference committee to refer this to the standing committee on Constitution and By-laws was approved by the House of Delegates.

Reference Committee on Dental Education

The following report of the Reference Committee on Dental Education was made by John P. Burke, District of Columbia, chairman.

Autonomy for Dental Schools.—The special Committee on Dental and Medical Relations, in its supplemental report, had requested reiteration "of the express policy of the American Dental Association for autonomy for dentistry as a profession and for all schools of dentistry." On recommendation of the reference committee, the House of Delegates voted to approve this request.

Supplemental Report.—The following supplemental report of the Reference Committee on Dental Education was presented by John P. Burke, District of Columbia, chairman.

Requirements for the Accrediting of a School for Dental Hygienists.—The recommendation of the reference committee "that the House of Delegates approve the 'Requirements for the Accrediting of a School for Dental Hygienists' as submitted by the Council on Dental Education in its annual report" was approved.

Requirements for the Approval of Examining Boards in Dental Specialties.—The reference committee recommended that the supplemental report of the Council on Dental Education be amended as follows: insert the words "fundamental science" before the word "laboratories" in line 4, subsection 6, page 2 of the mimeographed supplemental report; insert the words "fundamental science" before the word "laboratories" in line 11, subsection 6, page 2 of the same mimeographed report. "The Requirements for the Approval of Examining Boards in Dental Specialties," as amended by the reference committee, was approved by the House of Delegates.

Certification of Specialists Approved by Examining Boards.—The recommendation "that the House of Delegates approve as the general policy of the American Dental Association the certification of specialists approved by examining boards" was approved.

Reference Committee on Legislation

The following report of the Reference Committee on Legislation was made by James W. Brown, District of Columbia, chairman.

Use of Federal Funds for Indigent.—The recommendation of the reference committee that "the House of Delegates approve of federal legislation which limits the use of federal funds granted to states for dental care and treatment services to those families and individuals having insufficient income to pay the whole cost of such services" was adopted by the House of Delegates.

Parity of Dental Corps.—The recommendation of the Committee on Legislation to approve federal legislation which would establish the dental corps in each of the armed services on a basis of parity with the medical and other staff corps was approved by the reference committee and adopted by the House of Delegates.

Unification of Dental Corps.—The Committee on Legislation had recommended that it be authorized to seek unification of the dental corps of the Army, Navy and Air Force into a single unit with a separate autonomous department in the event that a merger bill is given serious consideration by Congress.

On recommendation of the reference committee, this recommendation was adopted by the House of Delegates.

Reference Committee on Prosthetic Dental Service

The following report of the Reference Committee on Prosthetic Dental Service was presented by David J. Fitzgibbon, District of Columbia, chairman.

Liaison Committee.—The recommendation of the special Committee on Prosthetic Dental Serv-

ice "that every constituent dental society maintain a prosthetic dental service committee to serve as a liaison between the society and the dental laboratory industry" was approved.

Relations With National Laboratory Organization.—The reference committee recommended approval of the recommendation of the Committee on Prosthetic Dental Service "that it be the policy of the American Dental Association to have official relations only with a truly democratic national laboratory organization which has a structure similar to that of the American Dental Association and whose governing power arises from the state level."

Philip E. Adams read the advisory comment of the Board of Trustees that it does not concur in the recommendation "because it removes authority from the laboratory industries to organize as they choose."

It was moved by Marcus L. Ward, Michigan, that this recommendation be tabled because of lack of sufficient information. The motion was seconded by Charles A. Pankow, New York, voted upon and carried.

Recognition of Technicians and Laboratories.—The reference committee recommended approval of the recommendation of the Committee on Prosthetic Dental Service "that it be the policy of the American Dental Association to recognize the dental laboratory technician and the dental laboratory as essential adjuncts of the dental profession but in no sense as independent agencies capable of rendering a health service to the public." On proper vote, the House of Delegates approved this recommendation.

Education of Laboratory Technicians.—The recommendation of the reference committee to approve the recommendation of the Committee on Prosthetic Dental Service "that preliminary and terminal education of dental laboratory technicians in proprietary schools be disapproved as not meeting standards designed to advance the welfare of the prospective dental laboratory technician or his potential service to the dental profession" was adopted by the House of Delegates.

On-the-Job Training.—The reference committee recommended that the recommendation of the Committee on Prosthetic Dental Service regarding on-the-job training be amended to read as follows: "The committee recommends that until such educational opportunities are developed under the auspices of accredited dental schools, on-the-job training be used to provide for essential needs in this field." The recommendation, as amended, was adopted.

Accreditation of Dental Laboratories.—The reference committee recommended approval of the recommendation of the Committee on Prosthetic Dental Service on placing the accreditation program in operation as soon as possible by all constituent societies.

The following advisory comment of the Board of Trustees was read by the secretary: "The Board of Trustees does not recommend the adoption of this recommendation regarding accreditation because it compels the American Dental Association to set up standards for, and accredit, a trade organization. Since accreditation is the present program of the Association, the Board recommends that the House of Delegates take such action as is necessary to change this policy."

The discussion that followed brought out the fact that the program of accreditation of dental laboratories was well under way in several states, notably in Southern California; that it is entirely voluntary on the part of the state as to whether it shall have an accreditation plan or not; that when a dental laboratory applies to the Association for accreditation, it pays a fee to the Association based on the size of the laboratory; 75 per cent of the fee is returned to the state to help defray the expense of inspection of the laboratory and 25 per cent is retained by the Association to defray expenses incident to operating the program. It was reiterated that the accreditation was approved by the House of Delegates in 1946 in Miami so that question was already settled; that the biggest problem facing the dental profession today was the laboratory situation; that if the American Dental Association does not cooperate in this field, it will find itself in difficulty at a later date. It was further brought out that, even though dental technicians are licensed in certain states, the laboratories still must be accredited by the state society.

The recommendation that the accreditation program be placed in operation as soon as possible by all constituent societies was approved by the House of Delegates.

Principles to Govern Program for Committee.—The reference committee recommended that the principles enumerated by the Committee on Prosthetic Dental Service in its supplemental report to govern its program be amended to read as follows:

1. The regulation of dental laboratories and dental laboratory technicians is of increasing concern to the dental profession.

2. In those states where self-regulation has produced harmony between the groups, this program should be encouraged and left undisturbed.

3. State and local dental societies should extend invitations to dental laboratory owners and dental laboratory technicians whenever programs on dental laboratory procedures only are being presented at a dental society meeting.

4. The basic training of dental laboratory technicians should be conducted under the auspices of accredited dental schools in accordance with the program of the Council on Dental Education.

5. State prosthetic dental service committees should cooperate with dental laboratory organizations in making further training available to dental laboratory technicians.

6. State dental laboratory associations should be encouraged by state dental societies in order to improve liaison between such groups and state dental prosthetic service committees.

7. State prosthetic dental service committees should promote relations between dental schools, dental laboratories and the dental profession, leading to the employment of the graduates in dental laboratory technology with opportunity for added experience and justified advancement.

8. Until a national representative organization of dental laboratory owners is established similar in structure to the American Dental Association, no official recognition will be given at the national level to any group of laboratory owners.

9. Further study should be made by the Committee on Prosthetic Dental Service, in cooperation with the Committee on Legislation, of problems associated with dental laboratories and dental laboratory technicians.

The recommendation of the reference committee was approved.

Legislation for Regulation and Licensure of Technicians and Laboratories.—The reference committee recommended that the recommendation of the Committee on Prosthetic Dental Service be amended to read as follows: "It is recommended that no legislation for the regulation and licensure of dental laboratories or dental laboratory technicians be introduced at this time. However, if in the good judgment of the dental societies in the individual states, such legislation is deemed necessary it should conform to the specifications laid down by the Committee on Prosthetic Dental Service of the American Dental Association and approved by the House of Delegates in 1946." The recommendation, as amended, was approved.

Alterations in Accreditation Plan.—The recommendation of the reference committee to concur in the recommendation concerning the making of minor alterations in the accreditation plan at the state level was approved.

Amendment of Accreditation Plan.—The reference committee recommended approval of the recommendation of the Committee on Prosthetic Dental Service regarding amendment of the accreditation plan to include provisions that: (1) 75 per cent of the income of the American Dental Association is to be returned to the state dental society for carrying on of the prosthetic dental service program; (2) the accreditation year is to begin January 1 and end December 31; (3) annual accreditation fees are due January 1. The recommendation was approved by the House of Delegates.

Reference Committee on Public Health

The following report of the Reference Committee on Public Health was presented by J. E. John, Virginia, chairman.

National Children's Dental Health Day.—The reference committee reported concurrence with the recommendation of the Council on Dental Health (supplemental report) that the House of Delegates determine the advisability of appropriating $25,000 annually for a National Children's Health Day but recommended that no appropriation be made until a National Children's Dental Health Day had been proclaimed. W. W. Hurst, Ohio, moved to amend this recommendation so that the Council on Dental Health be directed to take immediate steps to request the President of the United States to proclaim a National Children's Dental Health Day. This recommendation was supported by T. J. McDermott and R. E. Creig, both of Ohio. The amended recommendation was adopted by the House of Delegates.

Free Dental Care for Those Who Can Pay.—The Committee on Dental and Medical Relations, in its supplemental report, had requested "adoption of a means test on the local level

as dentistry's requirement in any health care legislation which the American Dental Association or its constituent bodies approve."

The Reference Committee on Public Health recommended as a substitute that "no free dentistry be given to any person able to pay at any level except for research purposes authorized by the American Dental Association." This recommendation of the reference committee was approved by the House of Delegates.

Supplemental Report of the Relief Commission

The chairman of the Reference Committee on Miscellaneous Business asked that the recommendation be considered separately in connection with the advisory comments of the Board of Trustees:

Dedicated Relief Fund.—The reference committee approved the recommendation of the Relief Commission that the Relief Fund should be specifically dedicated for relief purposes.

The following advisory comment of the Board of Trustees was then read to the House of Delegates: "The Board of Trustees agrees with the recommendation of the Relief Commission that the Relief Fund should be specifically dedicated to relief purposes and unattachable by any legal action."

It was moved by John S. Owens, New Jersey, chairman of the Relief Commission, that the Board of Trustees be instructed (1) to set up the Relief Fund as fully detached from any other fund of the Association; (2) to hold this Fund in trust as a separate fund protected legally from attachment and to be used for no other purpose than that for which funds are voluntarily contributed: the relief of worthy dentists in financial distress.

The motion was seconded by Olin Kirkland, Alabama, voted upon and declared carried.

Limitation of Principal.—The reference committee expressed its concurrence in the recommendation of the Relief Commission that no limitation be placed on the principal of the Relief Fund.

The following advisory comment of the Board of Trustees was read to the House of Delegates. "The Board of Trustees has no recommendation regarding the limitation of the Relief Fund at this time."

It was moved by John S. Owens, New Jersey, chairman of the Relief Commission, that the House of Delegates go on record as approving the present statement in the bylaws which does not place any limitation on the Relief Fund. Dr. Owens further stated that the limitation of the Fund to $500,000 as proposed in the revision of the bylaws was not desirable.

The motion was seconded, voted upon and declared carried.

Study for Retirement Security.—The reference committee reported concurrence in the recommendation of the Relief Commission that a study of plans for retirement security be authorized by the House of Delegates.

The following advisory comment of the Board of Trustees was read to the House of Delegates. "The Board of Trustees does not concur in the proposal to make a study of retirement security for several reasons, one of which is that it involves an expenditure of more than $15,000."

It was moved by C. Raymond Wells, New York, and seconded by Paul Jones, New York, that this consideration of this recommendation be postponed until the annual session in 1948. The motion was voted upon and declared carried.

Increase in Relief Grants.—The reference committee concurred in the recommendation of the Relief Commission that the present method of matching the grants of constituent societies be altered so that the Association could grant twice as much as the constituent society.

The following advisory comment of the Board of Trustees was read to the House of Delegates. "The Board of Trustees wholeheartedly concurs in the recommendation that grants from the American Dental Association be increased to twice as much as the amount of the state society grant and that the necessary changes be made in the rules and regulations of the Relief Commission."

The recommendation of the reference committee was approved.

Office of Relief Commission.—The reference committee recommended that final disposition as to the location of the office of the Relief Commission be referred to the House of Delegates for decision.

The following advisory comment of the Board of Trustees was read to the House of Delegates. "The Board of Trustees has approved the transfer of the office activities of the Relief Commission to the Central Office. This action was taken in order to reduce the costs of administering the grants to needy dentists. These costs are taken from the Relief

Fund and represent contributions to the Fund. The Board of Trustees emphasizes that this transfer of office activities in no way affects the present policies of the Relief Commission which will continue to be under the direct supervision of the chairman and secretary of the Relief Commission."

Action on this recommendation was deferred by the House of Delegates until a representative of the Board of Trustees could explain the action taken by that body.

Reference Committee on Rules and Order

The Reference Committee on Rules and Order presented the following report through C. Raymond Wells, New York, chairman.

Size of House of Delegates.—The reference committee reported that it had considered various resolutions affecting the size of the House of Delegates and presented a recommendation. The reference committee moved that this recommendation be referred to the special committee created at this annual meeting and to the standing Committee on Constitution and Bylaws for its advice and guidance. This recommendation was adopted.

Resolution of Connecticut State Dental Association on Selection, Number and Expenses of Delegates.—The reference committee reported concurrence in this resolution pertaining to the selection of delegates by constituent societies within one month after the adjournment of an annual session of the House of Delegates. On recommendation of the reference committee, the House of Delegates adopted the resolution.

Resolution of Southern California State Dental Association on Expenses of Delegates.—The reference committee moved approval of this resolution on the payment of traveling expenses of members of the House of Delegates. On proper vote, the resolution was adopted.

Resolution of Dental Society of State of New York on Changes in Procedure of House of Delegates.—The reference committee expressed its approval of the recommendation "that the presiding officer at sessions of the House of Delegates should be a speaker who should be elected by the House of Delegates." It moved that it be referred to the special committee created at this meeting and to the standing Committee on Constitution and Bylaws for advice and guidance. This motion was adopted.

Speaker of House of Delegates.—The recommendation of the reference committee "that the standing Committee on Constitution and Bylaws incorporate a definite provision in the bylaws providing for a speaker who should be a regular member of the American Dental Association" was approved.

A. D. A. AFFAIRS

INFORMATION REQUESTED ON MAIL ORDER DENTISTRY

A report has been received at the central office of the American Dental Association that a large dental laboratory currently is advertising the repair or reproduction of dentures on request by mail if the dentures were made originally either by a dentist or upon the prescription of a dentist.

Information concerning any such repair or reproduction should be sent to the Committee on Legislation, American Dental Association, 222 East Superior St., Chicago 11.

H. B. WASHBURN HONORED AT TESTIMONIAL DINNER

Dental leaders of the midwest attended a testimonial dinner in honor of H. B. Washburn, new president of the American Dental Association, at St. Paul on September 23. The St. Paul District Dental Society, of which Dr. Washburn is a member, was host.

The speakers on the program included J. L. Morrill, president of the University of Minnesota; S. R. Steadman, president of the Minnesota State Dental Association; R. H. Volland, Iowa City, treasurer of the American Dental Association; Lon W. Morrey, editor of THE JOURNAL; C. W. Foster, Cedar Rapids, Iowa, Tenth District trustee of the American Dental Association; W. C. Pitzen, president of the St. Paul District Dental Society, and W. H. Crawford, dean of the School of Dentistry of the University of Minnesota. Max E. Ernst, St. Paul, was the toastmaster.

Also at the dinner were Harold W. Oppice, Chicago, and Obed H. Moen, Watertown, Wis., trustees of the Eighth and Ninth Districts respectively.

DENTAL SOCIETIES

FELLOWSHIP ESTABLISHED BY A. D. A. AT ARMY INSTITUTE

A fellowship in dental and oral pathology has been established by the American Dental Association in connection with the American Registry of Pathology at the Army Institute of Pathology, Army Medical Museum, Washington, D. C.

The fellowship is open to graduates of recognized dental schools. Appointments will be made for a one year period and will be subject to renewal. The fellowship is designed to afford advanced training in dental and oral pathology to dental graduates who wish to equip themselves for teaching or for work in a research institution.

Preference will be given to applicants who have had previous training in general pathology. Applications should be made by letter to the Director of the Army Institute of Pathology, Army Medical Museum, Seventh and Independence Avenues, S. W., Washington 25, D. C.

NEW YORK DENTAL HYGIENISTS ANNOUNCE MEETING NOVEMBER 7

The Dental Hygienists Association, New York, will hold its regular meeting at the Hotel Pennsylvania, Friday evening, November 7, according to Lenor Nordstrom of the publicity committee.

Immediately after the business session, the group will adjourn to the Women's International Exposition, which is being held November 3-9, at the Thirty-fourth Street Armory. This year the American Dental Hygienists Association is sponsoring an exhibit at the exposition.

SOUTHERN CALIFORNIA NAMES JAMES ROBINSON SECRETARY

The Southern California State Dental Association has announced the appointment on September 15 of James Robinson to the office of executive secretary.

Mr. Robinson is well known to dentists because of his activities in dental circles for many years. In assuming his new duties as secretary, he resigned his post as general manager of the Ticonium Corporation and as editor of *Tic* magazine.

DENTAL ASSISTANTS ESTABLISH BOARD OF CERTIFICATION

The House of Delegates of the American Dental Assistants Association, at its twenty-third annual session held recently in Boston, approved the establishment of a board of certification within the association.

The board will give examinations to dental assistants and grant certificates of qualification to successful candidates.

The delegates also approved the establishment of a central office for the association and engagement of a full time executive secretary. Officers elected at the meeting were Sadie L. Hadley, Beverly, Mass., president; Katie McConnell, Atlanta, Ga., first vice-president; Steve Ann Montgomery, Dallas, Tex., second vice-president; Mary Haney, Omaha, third vice-president; Aileen M. Ferguson, Jamaica Plain, Mass., general secretary, and Evelyn Brett, Etna, Pa., treasurer.

CHICAGO DENTAL SOCIETY CONFIRMS MIDWINTER MEETING

The Chicago Dental Society has announced that there will be no cancellation of either the 1948 or the 1949 midwinter meeting. Both will be held as usual during the second week of February.

The 1948 midwinter meeting will be held February 9-12 at the Stevens Hotel in Chicago. The society has announced that at present the Illinois Dental Society is making plans to welcome the members of the American Dental Association in September 1948.

PROGRAM OF GREATER NEW YORK DENTAL MEETING ANNOUNCED

The twenty-third annual meeting of the Greater New York Dental Society, sponsored by the First and Second District Dental Societies, will be held at the Hotels Pennsylvania and New Yorker, December 8-12.

Symposiums on the health of the dentist, periodontics and full denture technic by prominent physicians and dentists and a visual education program will be given. K. Neil Donally, chairman of press and publication, has announced that dental manufacturers, supply houses and laboratories plan to display the latest developments in equipment and technics.

The program of the meeting with full details will be sent on request early in November. Communications should be addressed to Mr. Donally, Room 106A, Hotel Pennsylvania, N. Y. 1. For convenience it is requested that all dentists make their clinic reservations early and present their membership cards at the time of registration.

LATEST DENTAL SOCIETY ACTIVITIES AND MEETINGS

Kansas.—The examinations of the Kansas Dental Board will be held December 14-17, Gordon L. Teall, secretary, reports.

Louisiana.—Four members of the Council on Dental Health, Louisiana State Dental Society, are speaking before all of the district societies during the 1947-1948 fiscal year. The first of these meetings on dental health was held by the Sixth District in New Roads, September 13.

Plan to Welcome Ohio State Dental Society

Harry J. Guerink, president, and Harvey C. Janke, president-elect of the Cleveland Dental Society, shown in the executive offices of the society's new headquarters as they formulate plans to hold open house for the members of the Ohio State Dental Society at the annual meeting to be held in Cleveland, November 9-12

Mississippi.—The next meeting of the Mississippi State Board of Dental Examiners will be held June 15, 1948, according to an announcement by M. B. Pearce, New Albany, who was recently elected secretary of the board.

Montana.—The 1948 meeting of the Montana State Dental Association will be held May 6-8 at Great Falls, C. S. Renouard, secretary-treasurer, announces.

PUBLIC HEALTH

X-RAY EXHIBIT AT STATE FAIR SHOWS VALUE AS DENTAL SERVICE

The interest manifested in the children's dental x-ray exhibit during the Illinois State Fair held in Sangamon County, August 8-16, indicates that this type of service should be given further study and trial, according to the report of John E. Chrietzberg, chief of the Division of Public Health Dentistry, Illinois Department of Public Health.

During the fair 1,924 roentgenograms were taken of 962 children. It was estimated that, for every child whose teeth were roentgenographed, ten spectators observed the work and commented on the exhibit. On the basis of these figures, approximately 10,000 persons saw the demonstration.

By means of this program many children became acquainted with the dental chair and many parents were educated to the value of early dental care for their children.

The roentgenograms taken at the fair will be mailed to the parents of the children. The mounts carry instructions for the parents to take the films to their local dentist for interpretation and to obtain necessary dental care for the child. A place is indicated also for the dentist's

signature when the work is completed. This signed card or mount is suggested for classroom use to show teachers that the child has received necessary dental attention.

V. J. FORNEY NAMED PUBLIC HEALTH SERVICE DENTAL CHIEF

Vernon J. Forney has been appointed chief of the dental section of the Industrial Hygiene Division, U. S. Public Health Service, J. G. Townsend, medical director and chief of the division announced.

Dr. Forney succeeds Lyman D. Heacock.

WELFARE MEETING HEARS PUBLIC AID CALLED CONSTANT NEED

Delegates to the recent meeting of the northeastern division of the American Public Welfare Association were informed that public welfare is a constant problem. In an address before the final session of the two day meeting, John J. Corson, Washington newspaper executive, pointed out that 11,000,000 persons are now receiving government aid despite the current record of 60,000,000 employed.

In the two years since the war ended, Mr. Corson declared, monthly payments to these people, who include minors and handicapped, unemployed and aged persons, have increased to about $500,000,000, a rise of 125 per cent.

DENTAL EDUCATION

OHIO STATE DENTISTRY SCHOOL ANNOUNCES WINTER COURSES

The College of Dentistry, Ohio State University, has announced the schedule of eleven courses to be offered during the winter quarter, through the aid of the W. K. Kellogg Foundation.

The courses are "Anatomy of Head and Neck," January 5-9; "Roentgenology," January 12-16; "Oral Pathology," January 19-23; "Crown and Bridge," January 26-30; "Removable Partial Dentures," February 2-6; "Operative Dentistry," February 9-13; "Oral Surgery," February 16-20; "Full Dentures," February 23-27; "Children's Dentistry," March 1-5; "Endodontics," March 8-12, and "Dental Caries Control," March 8-12.

Each course is given for five consecutive days, and enrollment is limited to ten students. Veterans may take this work under the provisions of the G. I. Bill of Rights by submitting a certificate of eligibility and entitlement.

Further information and applications may be obtained from the Postgraduate Division of the College of Dentistry, Ohio State University, Columbus 10, Ohio.

LOYOLA SCHOOL OF DENTISTRY FULLY ACCREDITED BY A.D.A.

At the meeting of the Council on Dental Education of the American Dental Association held in Boston, August 1, the School of Dentistry of Loyola University, New Orleans, was given the rating of "full approval" by the association.

The school had been accredited as "provisionally approved" in June 1945.

Plans are under way for a new clinical building to be erected on the university campus, according to a report by Harlan H. Horner, secretary of the Council on Dental Education.

A. C. IVY PROPOSES PLAN TO AID MEDICAL STUDENTS

A federal loan fund for deserving students wishing to embark upon a medical career was suggested by A. C. Ivy, vice-president of the University of Illinois, in an address made during the recent convocation ceremonies of the American

College of Surgeons at the Waldorf Astoria Hotel, New York.

In acknowledging that a medical education is a long and expensive process and, as such, poses a financial problem for many worthy students, Dr. Ivy recalled that a federal fellowship program had been suggested in Washington. Opposing this plan, he stated that "the interest in and attitude toward systematic course work in medicine is superior when the student himself or his parents pay the bill. A grade of B is good enough for Uncle Sam but not for the father and mother."

WORLD DENTISTRY

MINISTER BEVAN SETS UP HOSPITAL BOARDS IN BRITAIN

Mr. Aneurin Bevan, Minister of Health, Great Britain, took the first step in the reorganization of hospital service under the National Health Service Act when he published an order last June setting up hospital boards in fourteen regions.

The boards, acting as agents of the Minister, immediately began the preparatory work for initiating the service next year. Their first task was to determine management of hospital resources. Ultimate control will be vested in the Minister, who will be answerable to Parliament for the service as a whole.

Members of the boards, twenty-two to thirty-two for each region, include members of hospital governing bodies, physicians, dentists, nurses, industrialists, trade union members and other local authorities.

The regional chairmen have been appointed for a term ending in March 1950. A third of the other members will retire at the end of each year, beginning in March 1949, but they will be eligible for reappointment, and the term of office of future members will be three years. All appointments are honorary and unpaid.

TORONTO ACADEMY SPONSORS WINTER CLINIC NOVEMBER 27

The Toronto Academy of Dentistry will sponsor a one day winter clinic on November 27, to be held in the Royal York Hotel, Toronto, Ontario.

Correspondence should be directed to the secretary of the Academy, E. A. White, 1474 Bathurst St., Toronto.

FINLAND REQUESTS BOOKS AND PERIODICALS FROM A. D. A.

A request for gifts of scientific and technical books and periodicals to the Institute of Technology in Finland has been received by the American Dental Association through the American Friends Service Committee.

Contributions will be used to replace the library of the institute which was totally destroyed by bombs. Any such gifts should be marked for the Institute of Technology, Helsinki, and sent to the Legation of Finland, 2144 Wyoming Ave., N.E., Washington, D. C. Dr. K. T. Jutila, the Finnish Minister, will arrange for their being shipped to Finland.

LEGISLATION

SENATE EXPECTS EARLY FINISH OF HEALTH BILL HEARINGS

A race for early completion of hearings on the new Wagner-Murray-Dingell health insurance bill, S.1320, and the Taft "National Health Agency" bill, S.545, is expected to take place as soon as Congress reconvenes.

The hearings will be held before a subcommittee of the Senate Committee on Labor and Public Welfare composed of H. Alexander Smith of New Jersey, chairman; Forrest C. Donnell of Missouri; Wayne Morse of Oregon; James E. Murray of Montana, and Claude Pepper of Florida. After the hearings, the

subcommittee will make a report to the full committee, of which Robert A. Taft is chairman.

Powerful lobbies both inside and outside the federal government are said to be behind the new Wagner-Murray- Dingell bill, which was introduced late in the last session but was given immediate hearings after Senator Murray demanded that the bill be given equal consideration with Senator Taft's.

Passage of another Taft bill, S.140, which would create a department of health, education and social security with cabinet status, is expected in some quarters before any other pending health measure reaches the floor.

It is reported that Senator Taft favors S.545 more than S.140. The former bill would establish a separate federal agency, not with cabinet rank, to handle national health activities and would operate through grants-in-aid to states by the federal government in making health facilities available to those without sufficient income to pay for them.

MISSOURI HYGIENIST BILL BECAME LAW IN OCTOBER

On July 25 Governor Donnelly of Missouri placed his signature on the Dental Hygienist Bill, H.B. 105, which requires licensure of dental technicians. More than thirty-five other states have already passed such legislation. The law became effective in October, ninety days after the date of the Governor's signing.

The bill provides that duly licensed dental hygienists are limited to the "treatment of human teeth by removing therefrom stains and calcareous deposits, by removing accumulated accretions from directly beneath the free margin of the gums and by polishing the exposed surface of the teeth." A dental hygienist may practice "under the continuous supervision and inspection of such legally qualified and licensed dentists" as may be authorized to engage dental hygienists.

Dentists must apply to the Missouri Dental Board before engaging a licensed hygienist and, except in certain cases, a dentist may employ only one hygienist.

FEDERAL AGENCIES

NATIONAL RESEARCH COMMITTEE ON DENTISTRY HOLDS MEETING

The first meeting of the Committee on Dentistry, Division of Medical Sciences, National Research Committee, was held September 15 at the National Academy of Science, Washington, D. C.

The meeting was primarily an organizational session. The purpose and functions were outlined, and it was stated that the committee would act in an advisory capacity to the dental services in governmental departments.

Among those who attended the meeting were A. LeRoy Johnson, Great Barrington, Mass., chairman; J. L. T. Appleton, Philadelphia; Hermann Becks, San Francisco; Sam G. Cole, Atlanta, Ga.; J. M. Dunning, Boston; Frederick C. Elliott, Houston, Texas; Robert W. McNulty, Chicago; Howard M. Marjerison, Boston; Walter Morgan, Nashville, Tenn.; Roland E. Morse, New York; B. T. Richey, Colorado Springs, Colo.; Henry A. Swanson, Washington, D. C., and Lawrence E. Van Kirk, Pittsburgh.

COMMITTEE OF SEVENTEEN NAMED TO BROADEN SOCIAL SECURITY

Senator Millikin of Colorado recently appointed a committee of 17 representatives of labor, business and the professions as the first step in revising Social Security laws during the next session of Congress.

Senator Millikin, chairman of the Senate Finance Committee, disclosed that he favors broadening of the laws to grant

such benefits as unemployment compensation and old age pensions to persons not now entitled to them.

The largest groups not now covered include farmers and agricultural workers, domestic servants, state and federal government employees, self employed persons and employees of charitable institutions.

The new committee is headed by Edward R. Stettinius, Jr., former Secretary of State and now rector of the University of Virginia.

Frank Bane of Chicago, long active in public welfare work and now executive director of the Council of State Governments, is one of the members of the committee.

U.S. DEPARTMENT OF COMMERCE REPORTS 1946 DENTAL EXPORTS

A report of exports of dental goods from the United States has been prepared by the General Products Division, Commodities Service, Office of International Trade, from the records of foreign commerce and navigation, U. S. Department of Commerce.

The 1946 totals on exports of dental goods were listed as follows: dental instruments, $754,355; artificial teeth, $4,623,234; dental gold, alloys, $1,800,920; other dental goods, $6,443,454.

ARMY AND NAVY

JOINT ARMY-NAVY MEDICAL SUPPLY CATALOGUE ISSUED

The first Joint Army-Navy Catalogue of medical material has been issued. This volume supersedes the separate Army and Navy medical supply catalogues which were in use heretofore. When distribution is completed, every Army and Navy medical and hospital facility will have a copy of the new catalogue.

Nearly 8,000 items, ranging from expendable items such as tongue depressors and dental burs to therapeutic x-ray units costing approximately $10,000, are listed. The items are divided by types into fourteen classes. The catalogue's cross index facilitates location of an article by its name or number.

Preparation of the joint catalogue was begun in 1945 under the direction of former Surgeons General Norman T. Kirk of the United States Army and Ross T. McIntire of the United States Navy and their respective chiefs of supply, Brig. Gen. Edward Reynolds and Rear Admiral K. C. Melhorn. It was completed under the supervision of their successors, Surgeons General Raymond W. Bliss and Clifford A. Swanson and the present chiefs of medical supply, Col. S. B. Hays (MC) USA, and Capt. L. G. Jordan (MC) USN.

TEN NAVY CENTERS HOLD DENTAL OFFICER TESTS NOVEMBER 3

The next examination of applicants for appointment as lieutenant (jg) in the Dental Corps of the United States Navy will be held on November 3 at ten authorized centers throughout the country, according to an announcement from the office of the Surgeon General.

The examinations will take place at the U. S. Navy Dental Clinic, Brooklyn; U. S. Naval Station, Norfolk, Va.; Marine Recruit Depot, Parris Island, S. C.; U. S. Naval Air Station, Jacksonville, Fla.; U. S. Naval Training Center, Great Lakes, Ill.; U. S. Naval Training Center, San Diego, Calif.; U. S. Naval Station, Treasure Island, San Francisco; Puget Sound Naval Shipyard, Bremerton, Wash.; U. S. Naval Training Station, Newport, R. I., and U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md.

Applicants for appointment must be citizens of the United States who are

at least 21 years of age but less than 32 at the time of appointment and must possess a degree in dentistry conferred by an accredited dental school. Applications for permission to appear for the examination should be submitted immediately to the nearest Office of Naval Officer Procurement.

Inactive dental officers of the Naval Reserve who received their initial appointment prior to December 31, 1946, who have served on active duty for more than six months and who fulfill the age and physical requirements may apply for transfer to the Regular Navy, without professional examination, regardless of the date of release to inactive duty.

Requests for additional information may be addressed to the Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.

ACTIVITIES OF DENTAL UNITS IN NAVAL RESERVE ANNOUNCED

Announcement has been made of the activation in the Third Naval District of Volunteer Dental Division 3-1, under the command of Cmdr. Thomas Rockford, and Volunteer Dental Division 3-2, under Cmdr. Morris Orgel.

Each of these divisions will have departments of operative dentistry, prosthetic dentistry, oral pathology, oral surgery and oral diagnosis, with the necessary officer and enlisted personnel to man them completely.

The Eleventh Naval District also has announced the activation of two volunteer dental divisions, naming Capt. Ivy W. Parks and Capt. Perry M. Shaw as the respective officers in command.

Lieut. Wallace S. Andrews of the Voluntary United States Naval Reserve has been attached to Organized Surface Division 11-8, in the Eleventh Naval District, as officer-in-charge of a reserve dental corps school for the purpose of training dental technicians as well as conducting routine examinations of recruits. Fifteen of the thirty billets for hospital corpsmen in this division have been reserved for dental technicians.

GENERAL NEWS

STUDIES POINT TO DENTISTRY AS THERAPY IN LOSS OF HEARING

Many of the 10,000,000 Americans who suffer from impaired hearing should be sent to a dentist, according to an article in the September issue of the *Archives of Otolaryngology,* published by the American Medical Association.

The writer, David J. Goodfriend, Philadelphia, is reporting on studies carried out in the departments of dentistry, medicine and psychology of the University of Pennsylvania. Workers in this field, says Dr. Goodfriend, have established the importance of abnormalities of dental bite in producing certain hearing troubles "as thoroughly as Koch proved that the tubercle bacillus causes tuberculosis." Their studies point to dental treatment as the proper therapy.

Anatomic studies show that any abnormality of dental bite directly affects the eustachian tube, which brings about communication between the middle ear and the pharynx by adjusting air pressure in the middle ear to that of the air outside. Dr. Goodfriend's article does not claim that some such condition is at the root of every hearing defect nor that such a condition automatically brings about hearing defects. It does state that such abnormalities "probably influence about 40 per cent of all deafness."

Dr. Goodfriend reports that, at the university's special ear and throat clinic, studies of a group of 168 dental students showed that 55 per cent had dental malocclusions; the hearing of this group was 13 per cent less than that of the other 45 per cent.

COUNCIL ON DENTAL HEALTH

REPORT ON RESULTS OF THE NEW YORK DENTAL HEALTH WORKSHOP

THE Council on Dental Health of the New York State Dental Society conducted a study conference January 20-22, 1947, in New York. The purpose of the conference was to examine the dental health problems in the state with the view to recommending appropriate actions to the officers of the New York State Dental Society. The following proposals were agreed upon by the representatives of the district societies and the members of the state council who attended the workshop. The recommendations were subsequently approved by the New York State Dental Society.—*Allen O. Gruebbel, D.D.S., Executive Secretary.*

A. Recommendations for prevention of dental diseases:

1. Experimental and demonstration projects should be instituted to bring about a change in the concept and habits of brushing the teeth.

2. In the light of present knowledge, controlled experiments in the use of sodium fluoride for the prevention of caries should be instituted and enlarged along the lines of topical application and also of ingestion.

3. The scope of undergraduate teaching in the dental schools should be enlarged through added courses in the curriculum on preventive dentistry, especially as it relates to dentistry for children, and on preventive orthodontics.

4. Through postgraduate training.

5. Through the literature of the profession, in order to disseminate the present knowledge concerning prevention of dental disease.

6. Further preventive procedures, including cooperation between the general practitioner and the orthodontist, the medical profession and its allied specialties, the obstetrician, the pediatrician and the rhinologist should be encouraged. To further this end, it is recommended that orientation courses in dentistry be included in the curriculums of all medical and nursing schools.

7. Experimental projects should be set up for the purpose of presenting other methods of prevention.

B. Recommendations for the education of the public in dental health measures:

In order to create good dental health habits, it is proposed that the following mediums be utilized:

1. Schools.

2. Radios.

3. Education of the public by the dentist and hygienist in the dental office.

4. Literature: the press; pamphlets to industrial workers.

5. Lectures.

6. Further use of the facilities of the New York State Department of Health.

7. Motion pictures.

C. Recommendations for provision of dental care for a larger number of persons:

1. In order to provide dental care for a larger number of persons, it is proposed that the previous resolution relating to prevention and education be carried out to the extent that the incidence of dental disease will be markedly reduced.

2. The dental office apointment slip project

of the State Dental Health Council should be continued and enlarged to include New York City public, parochial and private schools and the parochial and private schools of the remainder of the state.

D. Recommendations regarding the responsibility of (1) dental profession, (2) city or county government, (3) school system and (4) lay committee:

The council would recommend to those charged with the establishment of a definite dental program that they bear in mind that the dentist should receive every consideration that will permit him to conduct his practice in an orderly manner and not overburden him to the extent that it would interfere with his health, impair his ability to earn a livelihood or interfere with his social life.

It is the opinion of this Council that the responsibility for the successful promotion of a dental health program should be shared by the dental profession and the public.

The dental profession should limit its responsibility to that part of the program which deals with the professional aspects, such as determining needs and adequate means for satisfying these needs. The public should assume the responsibility for providing adequate legislation and sufficient funds and such other assistance as will facilitate the operation of such a program.

1. The responsibilities of the dental profession in the organization and maintenance of a community dental health program should be:

a. A dentist approved by the Dental Society of the State of New York should be included on all health planning boards.

b. The Dental Society of the State of New York should provide an educational program which will enlighten the public through all available channels of communication as to the progress of dentistry and should employ an able public relations consultant in an advisory capacity for the successful development and presentation of this educational program.

c. The term "health care" should replace the term "medical care" in all public and private health programs; the word "medical" should be used only when it indicates a physician's services as distinct from the services rendered by other health personnel. It is an equal responsibility of the medical and the dental professions to foster and maintain closer cooperation in the development and maintenance of health programs.

d. The district dental societies must assume the responsibility of carrying out the general directives of the state society in all dental health programs. No project of a district society should be contrary to the policies of a state society.

2. The responsibilities of the city or county government in supporting a dental health program are:

a. The city and county governments should cooperate fully with the recommendations of the Dental Society of the State of New York in dental health programs, by giving adequate physical and financial support.

b. The Dental Society of the State of New York should go on record as approving the resolutions passed by the Council on Dental Health of the American Dental Association relating to dentists in public health service.

3. The responsibilities of the public school system in promoting dental health are:

a. The State Department of Education should continue to make it a requirement of the schools that adequate time be set aside for dental health education.

b. The public school system and/or responsible agency in cooperation with the Dental Society of the State of New York should see to it that the curriculum and textbooks are kept up to date with regard to dental health.

c. The accomplishment of the correction of dental defects is the responsibility of the family; in cases where indigency exists, it should be the responsibility of the public school system to refer the child through the proper channels for correction.

d. Any program offered to the public school system should be made available to the parochial school system.

E. Recommendations for the study of community dental health programs:

In the deliberations, it was the opinion that all such programs should be arranged, developed, controlled and administered by the local community on a voluntary basis.

The plan described by Harry Strusser[1] could be used as a pattern in setting up such committees.

Briefly, this type of organization calls for the enlistment and cooperation of the departments of health and education, welfare agencies, parents' and teachers' organizations and private practitioners.

1. Strusser, Harry, Dental Problems in Postwar Planning. *J.A.D.A.* 32:991 (August 1) 1945.

The long range objectives of any community dental health program should be:

1. Prevention of dental disease.
2. Improvement of dental services to all.
3. Extension of dental care to all classes.

The basic principles that should govern the establishment and maintenance of dental health education of the public should be:

1. The information dispensed should be based on accepted facts, such as the early detection and treatment of caries in children as a prevention of greater dental defects later in life and as an aid in reducing enormously the future dental care and maintenance.

2. All avenues for disseminating dental knowledge should be properly developed, controlled and used.

No community health program can be considered a health program unless dental care is included therein.

In an organized plan on a community level, those groups falling within the yardstick established by a means test should receive dental care. This service should be available to all, with special emphasis on the care of children's teeth.

The financing of dental care should be provided in the following manner:

1. By the individual, by the family, by the local community, by the state and by the federal government, in that order.

2. By the adoption of an experimental prepayment plan in order to secure data relative to the possibilities that this plan suggests and to secure accurate figures. Such a plan would have limited benefits and would include all children between 3 and 8 years of age.

3. By the adoption of postpayment plans employing recognized financial institutions which are approved by the district societies.

The criteria which should be used to establish a means test should be:

1. The number of members in the family.
2. The total amount of dental care required in the family.
3. The total income of the family.
4. The necessity of the family to receive full or partial aid.
5. All these criteria should be based on the particular community which is under consideration. In other words, a man may earn $40 a week in one part of the state, and it may be adequate for his dental needs; but a man receiving $40 a week in another part of the state may find that salary totally inadequate to take care of his dental needs, so that the second man, under the means test, would be entitled to full or partial aid.

An official social agency of the local community should administer the plan and determine eligibility.

Dental care should be rendered in private offices or institutions, properly controlled and supervised by a dentist, depending on the locality.

The criteria employed in evaluating the effectiveness of a community dental health program should be:

1. Comparative statistics and other available scientific methods relative to dental health under an organized plan before and after the plan is in operation.

2. The number of persons the plan reaches effectively.

F. Recommendations for the utilization and expansion of dental personnel and ancillary personnel:

1. It is desirable to increase dental personnel so that all persons who need dental care may receive it.

2. The desirable ratio of dentists to population varies with different communities. In the rural districts, it was felt that one dentist to 2,000 persons would be adequate. In the average community, which includes the small towns and small cities, it was felt that one dentist to 1,200 persons would be adequate. In the large metropolitan area, the ratio of one dentist to 900 persons was felt to be sufficient.

3. In further discussion of this subject, an attempt was made to determine the most efficient patient load for the average practitioner, in the event that a dental health program were to go into effect. From the data submitted, it was felt that 600 patients a year would be about a satisfactory load for one dentist. This was to include emergency care as well as routine dental practice.

4. A discussion of the methods to be adopted to secure an even geographic distribution of dentists in relation to the distribution of population resulted in the following recommendations:

a. An active educational program should be started to recruit students from rural areas.

b. A scholarship plan should be adopted in which dental students would be offered a scholarship by a community, provided a shortage of dental personnel existed in that com-

munity and provided the dental student, on graduation, would return to this community to practice for at least five years.

c. A dentist should be offered a part time position in a school system or with the Department of Health on a salary, thereby enabling him to develop a practice and to become acquainted more easily with the community.

d. A state dental college connected with a university, to be financed in the same way as other state colleges, should be established in central New York State so that it would be more readily available to students from rural communities.

5. In order to encourage young men and women to interest themselves in the study of dentistry, the following recommendations were made:

a. The cost of education should be lowered, since it was the unanimous opinion that the cost of professional education is too high and out of reach of many who ordinarily might become interested.

b. An active vocational guidance program should be adopted which should include, among other things, an elaborate speakers' bureau.

During the discussions, the question arose as to whether or not dental students or dental schools should be subsidized by the federal government. It was decided that the only subsidy to students should be on the scholarship plan previously mentioned. Funds for subsidizing students and schools should be administered by the state, even though such funds may be received from federal sources. Furthermore, it was the opinion that, no matter what the nature of the program is, the control and administration of all programs should not extend beyond a state-wide basis and the present standards of dental education should be maintained and increased.

6. The problem of whether or not the number of hygienists, technicians and dental nurses should be increased is expressed in the following unanimous opinion: "The employment of ancillary personnel will greatly increase the efficiency and effectiveness of dental practice. In view of this, it was recommended to increase the number of such specially trained individuals, to the extent that each operator engaged in private practice or in the practice of dentistry in any health program or clinic may have available to him at least one dental hygienist and one chair assistant. Other technical assistants should be made available where indicated and according to needs."

7. All ancillary aids should be trained according to the standards approved by the Dental Society of the State of New York, such training to be given only in institutions approved by the Dental Society of the State of New York and the New York State Department of Education.

COUNCIL ON DENTAL EDUCATION

EXAMINING BOARDS IN DENTAL SPECIALTIES

At the sessions of the Council on Dental Education held in Boston on August 1 and 5, the Council revised its "Requirements for the Approval of Examining Boards in Dental Specialties" and submitted the revision to the House of Delegates in a supplemental report for approval. The revision was prompted by constructive criticisms which had been received from specialty boards. The principal revision had to do with the two-year period of advanced study required of all candidates for a specialty certificate. In addition to the usual avenues

of advanced study in graduate or postgraduate courses, hospitals, clinics, dispensaries and fundamental science laboratories, provision was made for the recognition of preceptorships conducted under the direction of certified specialists.

On August 5 the Advisory Board for Dental Specialties met with the Council on Dental Education in a joint discussion of the basic educational requirements for all specialists. Subsequent to this meeting, the Advisory Board adopted the following memorandum and resolution:

The Advisory Board for Dental Specialties in a regular meeting on the morning of August 5, 1947, composed of regularly appointed representatives from the five recognized specialty boards; namely, American Board of Orthodontics, American Board of Periodontology, American Board of Pedodontics, American Board of Oral Surgery and American Board of Prosthodontics, together with representatives from the American Association of Public Health Dentists, upon motion regularly made and seconded,

Resolved that it be the sense of the Advisory Board for Dental Specialties that it is in accord with the Council on Dental Education in its work to date in regard to dental specialties, and favors the approval by the House of Delegates of the requirements for approval of specialty boards as submitted by the Council on Dental Education to the House of Delegates.

John C. Brauer
President, Advisory Board
Kenneth A. Easlick
Vice-President, Advisory Board
Harold J. Leonard
Secretary, Advisory Board

Upon the recommendation of the Council, the House of Delegates went on record as favoring the certification of specialists by examining boards approved by the Council. The American Board of Oral Surgery has been approved, and applications for approval are pending before the Council from the American Board of Pedodontics, the American Board of Periodontology, the American Board of Prosthodontics and the American Board of Orthodontics.

The "Requirements for the Approval of Examining Boards in Dental Specialties" as adopted by the Council on February 7, 1947, and amended on August 1, 1947, and as approved by the House of Delegates of the American Dental Association on August 6, 1947, now stand as follows:

Definition

A specialty in dentistry is a field of practice which calls for intensive study and extended clinical and laboratory experience by a dentist beyond the training offered as a preparation for general practice in the undergraduate curriculum. The following branches of dentistry are recognized at this time as suitable fields for the certification of specialists: oral surgery, orthodontia, pedodontia, periodontia and prosthodontia.

Organization and Function

An examining board in a dental specialty should be representative of a national organization of the specialty. It should be incorporated and its principal functions should be:

1. To determine the levels of education and experience of candidates for certification within the requirements fixed by the Council on Dental Education.
2. To provide and to administer comprehensive tests of the qualifications of candidates for certification as specialists.
3. To fix the limitations of general and special practice which holders of certificates as specialists will be required to observe.
4. To issue certificates of competence to dentists who satisfy the requirements of the board.

Qualifications of Candidates

1. Satisfactory moral and ethical standing in the dental profession.
2. Citizenship in the United States.
3. Graduation from a dental school accredited or otherwise recognized by the Council on Dental Education.

4. A license to practice dentistry issued by a legally constituted examining board, or other legally constituted authority, in the United States.

5. Membership in the American Dental Association or the National Dental Association.

6. A period of study after graduation from a dental school of not less than two years in graduate or postgraduate courses, hospitals, clinics, dispensaries, preceptorships under the direction of certified specialists or in fundamental science laboratories recognized by the Council and by the specialty examining boards as competent to provide adequate training in the special field. This period of study may be pursued wholly in a school giving graduate or postgraduate courses and may or may not lead to an advanced degree; it may also be pursued wholly in hospitals, clinics, dispensaries, preceptorships or fundamental science laboratories; or it may be pursued partially in schools or preceptorships and partially in other types of institutions.

One full academic year of graduate or postgraduate study will be considered as equivalent to a calendar year. Teaching or a fellowship in the field of the specialty may be considered in partial fulfillment of this requirement. The character of this period of study will be determined by the specialty examining board subject to approval by the Council.

7. An additional period of not less than three years of practice devoted primarily and principally to the specialty, which may be combined with further study under conditions determined by the board, subject to approval by the Council.

8. A satisfactory standing in the examination prescribed by the specialty examining board.

Waivers

Specialty certificates issued upon an equivalent basis prior to the adoption of these requirements by boards already in operation will be honored by the Council upon the approval of such boards; and other boards, which secure approval before issuing certificates, may grant certificates under waiver to specialists with recognized standing and ten years of experience upon requirements mutually satisfactory to the Council and the boards.

Withdrawal

Upon the recommendation of an examining board, the recognition extended by the American Dental Association, through the Council, to a holder of a certificate may be withdrawn.

REPORT OF COMMITTEE ON FOREIGN CREDENTIALS

SINCE the end of the war, inquiries to the Council on Dental Education from foreigners concerning opportunities for dental study and the requirements for admission to dental practice have multiplied noticeably. These inquiries come (1) from students who have completed their predental training in foreign colleges and desire admission as freshmen to dental schools in the United States, some of whom propose to remain in this country and some of whom plan to return to their homelands to engage in dental practice; (2) from graduates of foreign dental schools who plan to become citizens of the United States and to engage in dental practice here, and (3) from graduates of foreign

This report of the Committee on Foreign Credentials of the Council on Dental Education was presented to the Council at a meeting held in Boston on August 1, 1947. The recommendations of the Committee were approved by the Council.

dental schools who desire to secure an American dental degree and then to return to their homelands to engage in dental practice.

Preliminary Statement

On the question of the admission of foreign trained students to freshman classes in accredited dental schools in the United States, the way is clear for the establishment of a uniform procedure. The Council prescribes a minimum predental requirement of two years of credit in an accredited college of liberal arts, including certain specified subjects, and expects that all foreign trained students shall offer the equivalent of such training in foreign colleges. The only issue in this connection is in the evaluation of foreign credentials on a uniform basis through some one recognized agency.

Since the Council has not undertaken to accredit or to evaluate foreign dental schools on an equivalent basis, no uniform procedure prevails among our dental schools in determining the amount of advanced standing credit that should be given to graduates of foreign dental schools who seek dental degrees in this country. It seems highly desirable that all of our accredited dental schools should unite on the maximum amount of advanced standing credit which should be given to a graduate of any particular foreign dental school. Since most universities will not confer any of their degrees for less than one year's work, it seems likely that this circumstance alone will oblige all foreign graduates seeking dental degrees in this country to spend at least one year in further study. The experience of several schools indicates that graduates of many foreign dental schools should spend more than one year in additional study in order to secure the dental degree. The need of a national policy is clearly evident.

Admission to dental practice in the United States is determined by each state under its laws and under the rules of its board of dental examiners as authorized by law. No uniform procedure in dealing with foreign applicants prevails. Some states admit no foreign graduates, and some require additional study and graduation from an accredited dental school. Those states which do give some recognition to a degree from a foreign dental school would doubtless be glad to unite with their neighbors in a uniform evaluation of foreign credentials.

Repeated inquiries from dental schools and from examining boards in this country, as well as from prospective foreign students and applicants for admission to practice, prompted the Council on Dental Education on April 27-28, 1946, to appoint a Committee on Foreign Credentials to consider all phases of this issue and to consider the possibility of the establishment of concerted action among dental schools and dental examining boards in dealing with all foreign applicants. This committee consists of Robert W. McNulty, chairman, dean of the Chicago College of Dental Surgery, Loyola University, and a member of the Council; Charles W. Freeman, dean of the Northwestern University Dental School; J. Hillis Miller, associate commissioner of education of the state of New York; Lloyd E. Blauch, Office of Education, Washington, D. C., and Harlan H. Horner, secretary of the Council on Dental Education. The committee has conducted a survey of the existing situation among the dental schools and the examining boards, and this survey was considered at a meeting held in Chicago on February 10, 1947. The findings of the committee, together with its recommendations to the Council, are embodied in this report.

Admission to Licensing Examinations

The current situation among the several dental examining boards in this country, including the District of Co-

lumbia as a state, may be set forth briefly as follows:

Citizenship.—Thirty-two states require citizenship of all candidates for admission to licensing examinations; seven states and the District of Columbia require citizenship or a declaration of purpose to become a citizen; nine states do not require citizenship.

The states requiring citizenship are as follows:

Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont and West Virginia.

The states requiring citizenship or first papers are Arizona, District of Columbia, Illinois, Massachusetts, Michigan, New York, Oklahoma and Wisconsin.

The states in which citizenship is not required are California, Indiana, Maryland, Nevada, New Mexico, Utah, Virginia, Washington and Wyoming.

Recognition of Accredited Schools.—Forty-seven states and the District of Columbia admit to their licensing examinations graduates of all schools accredited by the Council on Dental Education. The state of New York admits to its licensing examinations the graduates of sixteen of the twenty-three schools accredited as "fully approved" by the Council and five of the fourteen schools accredited as "provisionally approved."

Recognition of Foreign Schools.—Forty-one states confine their licensing examinations to the graduates of dental schools in the United States. All but three of these forty-one states, Florida, Kentucky and Ohio, will admit to their licensing examinations a foreign dental graduate who satisfies all other requirements and pursues further studies in and graduates from a dental school in the United States. No uniform procedure prevails, but the customary procedure is to require the foreign graduate to spend two additional years in dental study. Florida, Kentucky and Ohio require foreign dental graduates to pursue the full four year course and to graduate from an American dental school. Eight states, Arizona, California, Illinois, Maryland, Massachusetts, Michigan, New Jersey and New York, will admit to their licensing examinations the graduates of one or more of the Canadian dental schools who satisfy all other requirements. California limits such admission to graduates up to 1924, and Michigan requires one year of additional study in the United States. All of these eight states oblige other foreign graduates to present evidence of graduation from a dental school in the United States.

Admission to Freshman Standing

The Committee found that, as of January 1947, there were enrolled in the dental schools of the United States ninety-one foreign trained students who had been admitted to freshman standing in part or in whole on the basis of their foreign credentials. The number of students in the various dental schools was as follows:

University of Southern California: one from Australia and one from Norway.

Loyola University, Chicago: six from Canada and one from Jamaica, British West Indies.

Northwestern University: eight from British Guiana, ten from Norway, one from Trinidad and one from India.

University of Maryland: one from Panama and one from Iraq.

Tufts College: twenty-one from Norway.

University of Michigan: six from South Africa and two from Canada.

University of Minnesota: ten from Norway.

Creighton University: one from Puerto Rico.

New York University: one from Czechoslovakia, one from Germany, one from Puerto Rico and one from Panama.

University of Buffalo: one from Canada.

Temple University: one from France.

University of Pennsylvania: one from Australia, five from Puerto Rico, two from Panama, one from British Guiana and one from the British West Indies.

University of Pittsburgh: one from Germany.

Meharry Medical College: one from Trinidad.

University of Washington: two from Canada.

Students With Advanced Standing

As of January 1947, there were enrolled in the dental schools of the United States sixty-eight foreign trained students who were admitted with advanced standing on foreign credentials. The number of students in each school and their standing was as follows:

Howard University: two from Germany with sophomore standing.

Northwestern University: thirty-five. Junior standing: one from China and one from India; senior standing: nine from England, seven from Australia, three from Switzerland, three from Sweden, two from Scotland and one each from Brazil, New Zealand, France, Holland and Greece; graduate standing: two from Sweden and two from Holland.

University of Illinois: two from Germany with junior standing.

Tufts College: six. Sophomore standing: one from Lithuania; junior standing: one each from France, Germany, Cuba, Greece and Czechoslovakia.

University of Detroit: one special student from Toronto.

University of Michigan: one from Poland with freshman standing and one from Scotland with sophomore standing.

St. Louis University: one from Germany with junior standing.

New York University: eleven. Sophomore standing: one from Czechoslovakia, three from Germany, one from Mexico, two from Cuba, one from Austria and one from Poland; junior standing: one from Cuba and one from Germany.

University of Pennsylvania: six. Sophomore standing: two from Greece, one from Austria and one from Cuba; senior standing: one from England and one from El Salvador.

University of Pittsburgh: one from Germany with freshman standing and one from Belgium with sophomore standing.

Recommendations

The committee was unanimous in its belief that all foreign trained students seeking admission to dental schools in the United States and freshman standing should meet the minimum requirements prescribed for admission by the Council on Dental Education. There was some difference of view as to the best method of dealing with foreign dental graduates who seek a dental degree in the United States. No uniform procedure prevails. The practice in the state of New York, where the majority of foreign dental graduates who desire to practice in this country seek a license, is to oblige all foreign dental graduates, except those from Canada, to spend two years of additional study in a dental school "registered" by the State Education Department and to secure its degree before they are admitted to the licensing examination.

On the other hand, many foreign dental graduates come to this country to pursue further studies and to secure an American dental degree with the expectation of returning to their homelands to engage in practice. The majority of such students attend the Northwestern University Dental School. Northwestern makes a distinction between those who expect to engage in practice in this country and those who expect to return to their own lands. Under Northwestern's practice, the foreign dental graduate who expects to go back home may, in exceptional cases, be admitted to graduate study and secure the degree of Master of Science in Dentistry without pursuing further undergraduate study. The foreign dental graduate who expects to practice in the United States may be obliged to spend two years in further undergraduate study, whereas, if he

elected to return to his homeland to practice, he might receive the dental degree in one year. The majority of the committee felt that there should be no distinction in the requirements for a degree, either on the undergraduate or graduate level, between the two groups of candidates.

Since a number of states already recognize one or more of the Canadian dental schools, the committee felt that Canadian dental graduates should be dealt with apart from all other foreign dental graduates and that steps should be taken to admit them to licensing examinations in this country on a parallel with graduates of accredited dental schools.

The committee makes the following recommendations:

1. The Council on Dental Education should notify all accredited dental schools that it expects that foreign trained students seeking admission to freshman standing will be obliged to meet its prescribed admission requirements.

2. The Council should invite all accredited dental schools to forward the credentials of foreign trained students seeking admission to freshman standing to its central office and the Council should seek the assistance of the Office of Education at Washington in evaluating such credentials. The secretary of the Council should be directed to keep a record of the credentials evaluated by this process to the end that a list of satisfactory foreign predental courses ultimately may be established.

3. Pending further study of all foreign dental schools, except Canadian, the Council should recommend to the accredited dental schools that they oblige all foreign dental graduates seeking a dental degree to spend at least two years in further study.

4. The secretary should be instructed to make a study of the experience of foreign dental graduates in American dental schools with a view to the ultimate establishment of levels of advanced standing which may be given to the dental graduates of different countries.

5. The Council should consider ways and means of recognizing Canadian dental schools which are on a level with accredited dental schools in the United States.

COMMITTEE ON LEGISLATION

EXPLANATION OF THE PAY INCREASE LAW

THERE is some misunderstanding and confusion regarding the provisions of Public Law 365, Eightieth Congress, which gives an increase in pay of $100 a month to many dental and medical officers in the Army, Navy and Public Health Service.

The law states that the increase in pay shall be paid "only during periods of volunteer service." This provision has created some question as to what constitutes "volunteer service." All officers in the armed services have voluntarily applied for their commissions, and no person has been drafted to be an officer. The question arises in the cases of officers who, being subject to the draft, have applied for commissions in lieu of being

drafted. Further, there are many dental and medical officers who have received some of their professional education at government expense under the Army Specialized Training Program and the Navy V-12 program and who are serving in the armed forces for a stated period, usually two years from the day of their entry. These officers are being held involuntarily although they voluntarily applied for their commissions.

The decision as to the meaning of the words "volunteer service" will affect all dental and medical students who participated in the Army Specialized Training Program and the V-12 program and a few others. The Bureau of Medicine and Surgery, Department of the Navy (formerly the Navy Department), according to a late report, has officially requested that it be determined whether any dental officer now on active duty, who has participated in the Navy V-12 program or the Army Specialized Training Program, may be considered to be in a volunteer duty status, in order to establish eligibility to receive the additional compensation. The Army Medical Department has been advised recently that it is the opinion of the Department of the Army (formerly the War Department) that the approximately 850 dental officers in category 5, who have from nine to eighteen months yet to serve under current War Department separation criteria (twenty-four months' service from the time of entry), are not in volunteer service during the remainder of such period and, therefore, are not eligible for the increase in pay of $100 a month, as provided in Public Law 365, Eightieth Congress. However, such dental officers who request and are granted commissions in the Dental Corps of the regular Army will thereby become entitled to receive the increase in pay.

It is assumed that the Department of the Navy will issue an opinion similar to the opinion of the Department of the Army. Similarly, any dental officer in the Navy who is now in involuntary service may become eligible for the pay increase by transferring to the regular Navy. Under present Navy regulations any former Navy V-12 dental student, who went on active duty on or before December 31, 1946, can apply on his record and without examination for transfer to the Dental Corps of the regular Navy, and if he is accepted he will be eligible for the pay raise. A former Navy V-12 dental student, who went on active duty after December 31, 1946, will be required to take the customary Navy dental examination in order to effect such transfer. The next Navy dental examinations will be held on November 3, 1947, in various cities.

Other provisions in the pay raise law are that the increase shall not exceed $36,000, which is equivalent to $100 a month for thirty years; that the increase shall not be included in computing the amount of an increase authorized by any other law; that the increase shall not be included in computing retired pay, and that the increase shall be restricted to those dental and medical officers who are now commissioned or who within the next five years become commissioned in the Dental Corps of the regular Army, Navy or Public Health Service, to certain reserve officers who during the next five years volunteer for extended active duty of one year or longer and to certain general officers.

Title II of the new law authorizes the appointment of specially qualified civilian dentists and physicians to permanent commissioned grades up to and including the rank of colonel in the Army and captain in the Navy. It is expected that regulations to provide for such appointments will be issued in the near future by both the Army and the Navy. The law also provides that dentists and physicians so appointed may be given a special credit for purposes of promotion.

A brief review of the history of the

pay bills will explain some of the problems faced by Congress and the reasons for the provisions in the law. When the pay bills were first introduced, at the suggestion of the War and Navy Departments, they proposed to give an increase in pay of $100 a month only to all medical officers in the Army and Navy. At the Congressional hearings the Committee on Legislation of the American Dental Association protested against this discrimination and requested that the bills be amended to include dental officers as well as medical officers, with the result that the bills were so amended.[1,2] Later the various bills were combined into one bill which gave a pay increase to dental officers on an equal basis with medical officers and which included the officers in the Army, Navy and Public Health Service. This bill became law on August 3, 1947.

At the hearings the War and Navy Departments presented a large amount of testimony showing that there was a severe shortage of physicians and an immediate necessity of adopting some method for retaining and recruiting qualified physicians for the armed services. Testimony was received from the Secretary of War, the Secretary of the Navy, General Eisenhower, Admiral Nimitz, the Surgeons General of the Army and Navy and others. The House committee, recognizing the need for legislation, said in its report: "Unless remedial legislation is passed by Congress the services will soon not be able to provide adequate health facilities for the personnel under the jurisdiction of the Army, Navy and Public Health Services."

The need for legislation having been established, there arose the question of how much of an increase in pay should be given and to whom. The evidence revealed that there is a substantial difference between the pay received by a medical officer and that received by a line officer over a period of years. The case of two men graduating from college may be used as an example. One of the men goes directly into the Army, and the other goes to medical school for four years and then spends one year in an internship. During the first five year period the line officer has made approximately $20,000 while the physician has been securing his professional education and training. In addition, the line officer is five years further along toward securing a promotion. Over a twenty year period the line officer will have received $26,000 more than the medical officer. If interest at 3 per cent is included in the calculation, the difference over a thirty year period comes to $52,976. The Army figured exactly on an actuarial basis what increase in pay would be necessary to make these two careers comparable and found that an increase of $100 a month for a thirty year period would be necessary.

During the hearings the Congressional committee discussed the question of whether the increase in pay should be given to all dental and medical officers or whether some of them should be excluded. Some of the Congressmen expressed their personal opinions that, since the purpose of the bill is to induce dental and medical officers to make a career of government service, the increase should not be given to officers who are in the service on a temporary basis. Other members observed that the former students in the Army Specialized Training Program and the V-12 program had already received extra or special consideration since some or all of their professional education had been received at government expense. The cost to the government of the increase in pay was also considered, and the House committee estimated that by the inclusion of the dentists the increased cost of the bill

1. American Dental Association Requests Increased Pay for Dentists in Army, Navy and Public Health Service. *J.A.D.A.* 35:212 (August 1) 1947.

2. Testimony on the Pay Bills in Congress. *J.A.D.A.* 35:379 (September 1) 1947.

will be approximately $1,440,000 for the Army, $1,179,000 for the Navy and $250,000 for the Public Health Service. There was also some discussion as to whether a special increase in pay for dental and medical officers might have an adverse effect on the morale of the line and other staff corps officers.

The final draft of the law reflects the desire of Congress to provide an increase in pay for dental and medical officers to bring their incomes up to an amount that is more comparable with the incomes being received by dentists and physicians in civilian life. It is expected that this increase will serve as an inducement to keep many practitioners in the services and will encourage others to apply for commissions. The amount of the increase extended over a thirty year period will approximately reimburse a dental or medical officer for the income that he might have received while he was obtaining his professional education and training.—*George H. Fox, Secretary.*

COUNCIL ON DENTAL THERAPEUTICS

COUNCIL TO INVESTIGATE OCCUPATIONAL DERMATITIS

As part of its program of therapeutic investigation, the Council on Dental Therapeutics is compiling a list of dentists who are sensitive to procaine (Novocain), Monocaine, Butyn and other drugs used in their practices.

The Council is beginning a study of possible means for the prevention and treatment of occupational dermatitis. The active cooperation of a large number of members of the dental profession will be necessary if the project is to succeed.

The Council asks that all dentists who are subject to occupational dermatitis write to the American Dental Association, 222 East Superior St., Chicago 11, stating the general nature of their ailments. Names will be held in confidence if the writer so requests.

BOOK REVIEWS

Dental Chronology: A Record of the More Important Historic Events in the Evolution of Dentistry. By Hermann Prinz, D.D.S., M.D., Sc. D., professor of pharmacology and lecturer, Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania. 189 pages, with 97 illustrations. Price $3. Philadelphia: Lea & Febiger, 1945.

Prinz's *Dental Chronology* is a book of dates and periods delimited by dates which are significant in the history of the profession. The events chronicled begin with earliest times (5000 B.C.) and extend to the present (1944).

As the book does not pretend to be a history of dentistry, it would be unfair to censure the work because it does not fulfill the purposes of a history. Nevertheless, since unthinking readers are inclined sometimes to regard dates as the most important facts in history, it is fitting to call attention to the truth that the time element is less significant in the evolution of any human activity than certain other relations; the really important things for a historical development are what happened, how it happened, why it happened and how it influenced subsequent events. Dates furnish merely a formal structure in which to confine these essentials. Consequently, a chronology, no matter how well done, has a limited usefulness. It is valueless as a textbook. No reader would care to peruse so disjointed an account consecutively. And no reader, with a serious purpose, would be interested in finding out what happened in a certain year. If a date is desired, it is the subject which one wishes to date; and so a subject index (which has been supplied) is necessary, and the chronologic arrangement is mostly dispensable. As a reference work, a list of dates has some usefulness, and this little book may be recommended for that purpose.

The author undoubtedly has discovered that any strictly chronologic plan offers difficulties. Some things, such as historical tendencies, cannot be dated, since they rise and decline gradually and have no definite beginning and end. With other things it is hard to decide where to place them in a sequence of definite dates.

A good chronology must be accurate, complete and convenient. With some exceptions, this chronology fulfills these requisites with success. A few of the dates have gone badly astray. On page 86, under the year 1823, is recorded, "Celsus describes plastic operations about the lips." Celsus died in the first century of the Christian era. Under the year 1844, page 99, is an account of the Harvard Dental School, which seems to have no relation to that year. Among the omissions may be mentioned the introduction of individual denture teeth by Fonzi, around 1804; the enunciation of the classification of malocclusion by Angle in 1899, and the histopathologic study of periodontitis by Gottlieb. A great number of biographical sketches of distinguished dentists and others have been included. The arrangement of these lives under the date of birth tends to mislead the reader. It would have been far better to insert each biographical account at some signal date in the subject's career or at the heyday of his professional accomplishment. As it stands, most of the distinguished dentists of the late nineteenth and early twentieth century are listed before the principal events which have made modern dentistry and to which they contributed.—*George B. Denton.*

Restorative Dentistry: A Clinical Photographic Presentation. By Jerome M. Schweitzer, B.S., D.D.S. 511 pages, with 1,014 illustrations. Price $15. St. Louis: C. V. Mosby Co., 1947.

This textbook is quite different from others that have been published in the fields of bridge and denture construction. It consists almost entirely of material taken from case records of the author. It contains more than one thousand excellent photographic plates, which present the clinical and laboratory aspects of the cases so that each is quickly and easily understood. Explanatory comments which are placed immediately adjacent to each illustration are brief but fully sufficient.

The subject matter is divided into ten well organized chapters: anterior bridgework, posterior bridgework, bilateral removable bridgework, occlusal reconstruction, methods of obtaining centric relation by means of a central bearing instrument and the check bite, introduction to full denture procedures, full denture technics, combined anatomic and functional technic of denture construction, immediate

dentures, theory and procedures, and rebasing. At the beginning of each chapter the author comments briefly on the particular phase of restorative dentistry discussed in the chapter, and at the start of each chapter subdivision he presents a specific restorative problem with a short résumé of standard rules, procedures and materials usually employed for solution.

These factual case records are extremely interesting, and the technic employed in each is described simply but accurately. Little or no attempt is made to theorize on the value of one type of restoration or technic over another. The reader is permitted to draw his own conclusions from the facts and photographs presented.—*Harold W. Oppice.*

The Story of Dentistry. By M. D. K. Bremner, D.D.S., secretary, Committee on History, American Dental Association; special lecturer on dental history, Tufts College Dental School. Second edition. 332 pages, with 40 illustrations. Brooklyn: Dental Items of Interest Publishing Co., 1946.

This book is well worth reading by those interested in the growth of dentistry as a profession as well as by persons curious about their teeth and concerned with oral health and tooth conservation. The reader should be warned that this book is not always an acceptable source of authoritative information, in spite of the author's opinion that it is "a fairly accurate account of dentistry's evolution from the beginning to the present" (p. viii). The reader should also note that, from page 95 on, after the account of the discovery of porcelain, the book is devoted almost exclusively to telling the story of American dentistry. Perhaps it is relatively not important whether Fauchard died in 1758 (p. 85) or in 1761 (p. 84); physicians and dentists will not be misled by the reference to nox vomica (p. 57); readers familiar with prehistoric races will have no trouble in identifying Maynas or Mayas; only those interested in the early history of the founding of the first dental school will worry because Bond is called Boyd (p. 130); most readers will not be interested in knowing that, contrary to the text, the use of hickory pegs as posts for crowns was almost exclusively an American practice and not described by Fauchard; it does not significantly alter the situation as described on page 131, "by 1870 there was a total of nine dental schools all privately owned," that Harvard Dental School, an integral part of Harvard University, was established in 1867. These are only samples of the failure of the author to produce a book that gives a fairly accurate account of dentistry.

There are thirty-four chapters assembled in twelve parts, a bibliography and a good index. The general plan is: (1) anthropologic facts and theories (pp. 1-28); (2) dentistry among early peoples (pp. 31-52); (3) dentistry from the fall of Rome to the Middle Ages (pp. 55-74); (4) roots of modern dentistry including the chapter on Fauchard, the so-called Father of Dentistry (pp. 77-104); (5) establishment of dentistry as a distinct branch of the healing art, the first dental journal and the first dental school (pp. 107-137); (6) dentistry's contribution to the mastery of pain, Wells and Morton (pp. 141-164); (7) discovery of vulcanite and the invention of the dental engine (pp. 167-189); (8) fillings and filling materials, gold foil, amalgam, cement and porcelain (pp. 193-206); (9) the casting process and the fight against commercialism, the gold inlay and the Taggart controversy (pp. 209-234); (10) professional and economic perplexities, focal infection and medical-dental relations (pp. 237-260); (11) specialties, particularly orthodontics and oral surgery (pp. 263-294); (12) miscellaneous (pp. 297-317).

The chapters bearing on the gold inlay and associated controversy are outstanding, partly because of the author's firsthand information. The short chapter on Fauchard is commended as a must to be read, because of its intrinsic interest and because French dentistry of this time made a substantial contribution to the United States during and just after the war for independence.

The second edition is greatly enlarged and a marked improvement over the first.—*Edward H. Hatton.*

Temporomandibular Arthrography. By Flemming Norgaard. 188 pages, with 31 plates (132 figures). Translated from Danish by Hans Andersen, M.D. Copenhagen: Einar Munksgaard, 1947.

Temporomandibular arthrosis, with symptoms of "cracking in the joint," reduced mobility and pain on movements, is one of the most frequent problems requiring roentgenography. Despite the obvious objective symptoms, the ordinary roentgenograms are often completely negative. There are two main

reasons. One is that, as a rule, roentgenographically discernible osseous changes occur only in the late stages of temporomandibular arthrosis. Two, the anatomic structure is that of a complicated joint with varying joint gaps and an interposed meniscus, with articular surfaces on the temporal bone, mandibular condyle and partly on the meniscus. Medially, the condyle points 10 to 15 degrees dorsally to the frontal plane, complicating roentgenographic procedures. The biconcave oval meniscus divides the joint into two separate joint cavities, joined only in rare cases through a perforation of the disk.

The complex superimpositions and varying densities of the structures in and around the temporomandibular joint present a difficult problem to the roentgenologist. Therefore, most procedures for roentgenographic examination of this joint employ projections making as little shadow as possible, preferably of regular structure. Lateral profile views have been found of greater value than *en face* or frontal views. The oblique-lateral transcranial technic is preferred by the author. The patient is placed with the side in question resting on the plate, sagittal plane almost parallel to the film, although the nose is turned in a little (10 to 15 degrees) to the film to correct for the deviation of the condylar axis from the frontal plane. The central ray is directed toward the joint nearest the film, 25 degrees cranially to the perpendicular on the film. The Lindblom technic produces the same results by projecting the central ray toward a point 2 cm. behind and 6 cm. above the auditory meatus farthest from the film, aimed at the joint nearest the film. The central ray will then form an angle of about 15 degrees over the horizontal plane and about 15 degrees backwards from the frontal plane. A focus-film distance of 70 cm. is used.

Because the conditions in the temporomandibular joint are analogous to those found in the similarly complicated knee joint, Norgaard adapted a contrast examination, which had met with considerable success in diagnosis of aberrations of the knee joint, to temporomandibular studies. A 35 per cent solution of Perabrodil was chosen in preference to iodine containing oils, gas or a 35 per cent solution of uroselectan because it gives the least untoward effects and is resorbed rapidly. Contrast oils give superior contrast but are not resorbed. The density of the surrounding bone precluded the use of gas, and uroselectan gives a pronounced burning and smarting pain of considerable intensity for ten to fifteen minutes. Even Perabrodil causes a delayed inflammatory reaction after a couple of hours.

The site of injection, posterior to the condyle and just in front of the tragus, was selected as most easily accessible to both joint cavities, allowing safest and most reliable puncturing of the two cavities separately, in order to give the least possible inconvenience to the patient and still grant as detailed and accurate a roentgenogram as possible. The amounts of contrast medium to be injected were determined empirically. Approximately 1 to 2 cc. of solution can be injected into the smaller lower joint cavity with minimal distension of the cavity. The larger upper cavity will take more and is examined last, since it overlaps the lower joint cavity in a profile arthrograph.

A high degree of correlation was noted between arthrographic and operative results. Twenty-three of 25 operations substantiated previous arthrographic interpretations. One hundred twenty-five cases, both normal and pathologic, were examined. The arthrographic changes most frequently demonstrated consisted of more or less extensive obliterations of the joint cavities, corresponding to adhesions between the joint surfaces. Perforations were most easy to recognize because of the simultaneous filling of both cavities. Detachment of the meniscus was verified operatively only twice. Norgaard believes that diagnostic use of arthrographs will yield early information concerning the localization and also the degree and character of the pathologic changes. In contrast, ordinary roentgenography is of no reliable diagnostic value in a great majority of the cases of temporomandibular arthrosis.

The author points out that some degree of skill is necessary in giving the injections to reduce the discomfort to a tolerable minimum. Moderate sensation is to be expected even with an accurate technic. Arthrographs are contraindicated in osseous ankylosis, in all forms of infectious arthritis of the joint, in all inflammatory processes in the surroundings of the joint and in highly nervous or young patients. Periarticular injections and hematomas are always possibilities and are often accompanied by a temporary exaggeration of symptoms of arthrosis. An accurate registra-

tion of physiologic rest is not possible since the patient is placed with the body horizontal for both the injections and the roentgenograms. This position could be modified easily to allow a vertical positioning of the head.

Despite the rigors of war and occupation and the difficulties of getting contrast mediums, Norgaard has made a significant contribution to our knowledge of temporomandibular disturbances. His book serves well as a basis for further research.—*T. M. Graber.*

Oral Surgery. By Sterling V. Mead, D.D.S., M.S., B.S. Third edition. 1,450 pages, with 821 illustrations. Price $15. St. Louis: C. V. Mosby Co., 1946.

The third edition of this comprehensive textbook follows closely the excellent plan of the original edition published in 1933. In fact, many of the chapters are practically identical. The lack of an adequate number of references of recent date is unfortunate. In chapter 3, "Preoperative Preparation," the omission of a discussion of preoperative administration of penicillin or the sulfonamides for the prevention or control of complications associated with surgical procedures in the presence of acute infections is to be regretted. Many persons may be subject to acute suppurative conditions or subacute bacterial endocarditis after the extraction of infected teeth and need this protection. Chapter 8, on chemotherapy, is an adequate presentation of the mode of action, limitations and methods of administration of the sulfonamides and penicillin.

"Infections of the Face, Neck and Floor of the Mouth" (chapter 14) includes a description of the fascial planes and spaces and a complete discussion of the infections involving these spaces. This chapter presents much interesting and valuable information. The lack of recent references on the specific diseases of syphilis, tuberculosis, actinomycosis, tetanus and hydrophobia is unfortunate in view of the advances in treatment of these diseases. Chapter 16, "Wounds and Injuries," could have been improved by the inclusion of the final experiences and conclusions of the maxillofacial surgeons in World War II, which proved without question that primary suturing and delayed primary suturing with thorough but limited débridement are indicated to prevent undue scarring, deformity and a prolonged course of plastic surgical treatment.

The subjects of periapical diseases of the teeth, surgical treatment of periodontal disease, residual infection, removal of teeth, removal of impacted teeth, removal of foreign bodies, surgical preparation of the oral tissues for restorations and surgical correction of abnormal labial frenums are discussed at length, and the accompanying illustrations are adequate.

The chapter devoted to apicoectomy and the accompanying bibliography are exactly as in the first edition. An up-to-date discussion and evaluation of these procedures should have been included with current references, for many reports of extensive series of cases have been published by dental officers in the armed services.

The chapter on fractures in general is similar to that in earlier editions and is a useful introduction to the discussion of fractures of the maxilla and the mandible in subsequent chapters. Discussion of fractures of the upper jaw deserves much more space, in order to provide for consideration of the fundamental aspects of diagnosis, the changing concepts of the treatment of fractures at high level involving the cranium, and the principles and types of numerous craniomaxillary appliances and methods of reduction and immobilization. A rearrangement of the references according to types of fractures and treatment of displacements would be of service to the reader.

The expansion of the chapter on fractures of the mandible was made necessary by the progress of recent years. One of the most important advances in splintage—plate attachments and screws—was omitted unfortunately.

The discussion of "The Temporomandibular Joint and Muscles of Mastication" in chapter 30 should have been more extensive, particularly the part concerning joint disabilities.

"Diseases of the Maxillary Bone" includes a discussion of a few tumors and some rare conditions that may provide difficulty in roentgenographic diagnosis. The importance of penicillin in the treatment of osteomyelitis should have been emphasized, in addition to being noted in case reports of recent date.

In chapter 32, "Malocclusion, Deformities and Malrelation of the Jaws," the fundamental surgical considerations of the treatment of mandibular prognathism deserve more extensive discussion. Though much has been written on this subject during the past five years, only one reference more recent than 1937 is included. The line drawings of surgical opera-

tions for retraction of the mandible are shown on mandibles with fully developed bodies and rami and consequently do not illustrate the technics in a really effective manner. Lengthy verbatim quotations from articles that date as far back as 1920 could have been condensed without depreciating the value of this chapter.

"Diseases of the Maxillary Sinus," chapter 33, is identical with that of earlier editions, and the latest reference is dated 1930. The oral surgical implications are discussed adequately, but the recent changing concepts of sinus disease should have been included.

Diseases and affections of the nerves of the face present a real problem to the dental surgeon, and this subject deserves more discussion than is found in chapter 35. No mention is made of the bizarre types of pain that may be associated with conditions of the temporomandibular joint and which may at times resemble the spasmotic pain of tic douloureux. Neither is the sensitivity to histamine in the differential diagnosis of obscure facial pains given any discussion in this chapter.

Chapters 36 and 37, on diseases of the lips, cheeks and tongue, contain much helpful information.

The subjects of hemorrhage, syncope, shock and collapse are discussed effectively in the next two chapters, and the references to recent concepts are adequate.

Seventy-two pages are devoted to an extensive discussion of harelip and cleft palate by Matthew N. Federspiel. The author has drawn on numerous sources for material and excellent illustrations of many types of operations. The over-all care of these maxillofacial cripples has shown much slower progress than any other branch of medicine or surgery. Too much of the chapter is devoted to discussion of surgical procedures that are by no means fully accepted by maxillofacial and plastic surgeons engaged in this field. It would have been better, in a textbook written primarily for students of dentistry, to have discussed the overall problem of these patients, including the control of dental caries, orthodontic treatment, prosthetic treatment where indicated, speech training and otolaryngologic and psychiatric care, in order to interest the dentist in the rehabilitation of these patients.

"Correlation of Surgery and Prosthesis in Orofacial Deformities," chapter 41, by John J. FitzGibbon, Thomas L. Blair and Henry J. Tvrdy, is a valuable contribution to the book.

The final chapters, devoted to tumors, cysts, physical therapy, postoperative treatment, diet and nutrition, are adequate in most particulars. The inclusion of a discussion of protein in health and disease and the applied physiology of protein administration in the preoperative and postoperative treatment of many patients requiring oral surgical operations would add greatly to the value of the last two chapters.

The dental student and the practitioner will find much of interest and value in this textbook regarding the principles of surgery, the extraction of teeth and minor oral surgery.—*C. W. Waldron.*

Practical Pedodontia or Juvenile Operative Dentistry and Public Health Dentistry. By Floyde Eddy Hogeboom, D.D.S., with special chapters by Forrest Anderson, M.D., Sc.D. (Med.); Harold Hawkins, D.D.S.; Thaddeus P. Hyatt, D.D.S., and Harry E. Straub, D.D.S. Fifth edition. 503 pages, with 467 illustrations. Price $8.50. St. Louis: C. V. Mosby Co., 1946.

This textbook has been widely used by dentists for many years. The fifth edition includes several new chapters. Hogeboom is a highly successful dental practitioner, a noted teacher and an influential author. This textbook is a culmination of extensive experiences in practice, teaching and writing and should be within easy reach of all dentists interested in the dental problems of the child.

The common clinical problems of child care are dealt with for the most part. A chapter on office economics deals briefly with the questions of fees, overhead, office records, establishing credit and investments. A short chapter is presented on the management of the child in the dental office. No detail is given on this important aspect of child care, but the cardinal rules of management are presented in a concise and understandable fashion. The chapter by Anderson on "Mental Hygiene Viewpoints on the Child" provides an understanding of some problems of child behavior.

The chapters on cavity preparations and filling materials for deciduous teeth are well illustrated and, for the most part, present the basic teachings of G. V. Black. A short chapter on roentgenography indicates the kind of roentgenograms and the size of films which should be used for children. Other chapters by Hogeboom deal with the characteristics of

caries of the adolescent child and how caries may be controlled, the importance of care of the permanent first molar, and the problems of space maintainers and prosthetic appliances for children.

The chapter on the biochemical aspects of preventive dentistry discusses the causes of caries, local and systemic conditions in caries and the importance of the various dietary factors in preventive dentistry. Fractured and injured incisor teeth, which are among the most serious problems faced by the dentist, are discussed thoroughly. The treatment of the pulp and the restoration of the crown of the tooth are also discussed.

Special chapters on "Prophylactic Odontotomy" by Hyatt, "Prevention of Dental Caries by Nutrition" by Hawkins and "Anesthesia for Children" by Straub help to make this book an important contribution to pedodontic literature.—*George W. Teuscher.*

Three Quarter Crowns. By F. Engel, L.D.S., R.C.S., Eng., Univ. Med. Dr. Vienna, Bournemouth, England. Translated and revised from the German text. 142 pages, with 182 illustrations. Index. Price $4.50. New York: Dental Items of Interest Publishing Company, Inc., 1946.

In America it is customary to look to Austria or to England for biologic interpretation and didactic theoretical background for dental procedures but to expect that intricate technical refinements will be found almost solely on this side of the Atlantic. It is extraordinary, therefore, that this book, written by a former Viennese dentist now residing in England, should appear with a wealth of technical and mechanical detail that can scarcely be matched in our own literature.

After a five-page introduction devoted largely to inveighing against the devitalization of teeth for the purpose of constructing bridge abutments and emphasizing the importance of maintaining healthy vital pulps, Dr. Engel describes in great detail his method for preparing teeth for three quarter crowns. His preparation is an intricate one, requiring no less than eight separate stages for its accomplishment.

After the preparation for incisors, cuspids, biscuspids and molars is described, the fabrication of the wax pattern is presented, by both the indirect-direct and the direct method. The cementation of the three quarter crown, especially when it is used for more than one bridge abutment or splint element, is also described. Americans may be startled by the recommendation that two assistants be utilized in this part of the operation, such practice being a luxury not uncommon in Europe.

The next section deals with an "analysis of the mechanical factors governing the possibility of bringing a bridge or splint of two, or more than two, three quarter crowns into position on the teeth." In this section Engel soars into the physics and theory involved in complicated bridges using rigid abutments. Much of the argument is directed at other writers (also European) in an effort, and a highly successful effort, to prove that several three quarter crowns can be so constructed and alined in a single rigid appliance that they will all go to place on the teeth when the bridge or splint is completed. Dozens of drawings and models are used to illustrate this thesis. Again the American dentist may be a bit startled, for it has been accepted for decades in this country that such bridges and splints are practicable.

Of special interest is the chapter on soldering. In order to escape the effects of the shrinkage of solder, Engel grooves each element in a special way and casts a separate "furrow inlay" to be soldered between elements. This procedure seems at first sight to be idealism carried to fanaticism. Every detail of the procedure is again illustrated and described so that there is no possibility of mistaking how it is to be followed. Crystallographic photomicrographs prove the advantage of soldering in this way. The arguments in favor of the method are so persuasive that, for complicated appliances at least, one begins to wonder at the crudeness of the usual methods of soldering. Photographs of three quarter crown margins further prove the excellence of Engel's results.

The book concludes with a systematic study of the indications and limitations of the three quarter crown, variations that may be required and a study of their relations to the dental pulp.

The translation, by J. C. Bullock, is excellent, and the writing is smooth and easy to read. The illustrations, although they have been reproduced from the book and not from the original photographs, are surprisingly clear.—*Warren Willman.*

CURRENT LITERATURE

Journal of Dental Research
June 1947

Titles marked with an asterisk (*) are reviewed below.

Caries of the Enamel. H. E. Frisbie and J. Nuckolls, University of California.—181.

Investigations on the Salivary Phosphates and Phosphatases. H. Eggers Lura, St. Elisabeth's Hospital, Holbaek, Denmark.—203.

*Factors Influencing Oral Glucose Clearance. J. F. Volker and D. M. Pinkerton, Tufts College.—225.

*Acid Production in Saliva-Carbohydrate Mixtures. J. F. Volker and D. M. Pinkerton, Tufts College.—229.

*Prevention of Dental Caries by Brushing the Teeth With Powders Containing Fluorapatite. J. F. McClendon, William C. Foster and N. Volney Ludwick, Hahnemann Medical College.—233.

*A Note on the Mechanism of Fluoride Fixation. Marlene Falkenheim and Harold C. Hodge, University of Rochester.—241.

*A Study of the Action of Antibiotics in Vitro on Microorganisms Isolated From Root Canals. R. S. Tulacek and E. B. Tilden, Northwestern University.—247.

*Tobacco and Gingivitis. I. Statistical Examination of the Significance of Tobacco in the Development of Ulceromembranous Gingivitis and in the Formation of Calculus. J. J. Pindborg, Danish College of Dentistry, Copenhagen, Denmark.—261.

*The Effect of Age and Region of Birth Upon the Relative Number of Naval Personnel Having Dental Prosthetic Replacements. C. A. Schlack, J. P. Flynn and L. J. Gerende, National Naval Medical Center.—265.

Experimental Periodontal Pockets in Dogs. H. M. Swenson, Indiana University.—273.

Factors Influencing Oral Glucose Clearance. J. F. Volker and D. M. Pinkerton.

The clearance from the mouth of 500 mg. portions of glucose which were sucked, eaten, chewed and rinsed-swallowed has been compared in 6 experimental subjects. The clearance was found to be most rapid for the rinsed-swallowed glucose and slowest for the sucked glucose. When glucose was administered in the form of chewing gum, low salivary glucose values were recorded after the first several minutes notwithstanding the persistence of the base. Attention is called to the possible significance of the findings in relation to the causation of dental caries.

Acid Production in Saliva-Carbohydrate Mixtures. J. F. Volker and D. M. Pinkerton.

The unstimulated saliva of persons with dental caries has been incubated at body temperature with various carbohydrate solutions. The acid production in sucrose and starch saliva mixtures was comparable to that in glucose and saliva. Two pentoses were found to be resistant to salivary action. It has been suggested that the breakdown of sucrose and starch in the mouth may not proceed through glucose but may be brought about by direct phosphorylation. Appreciable acid production has been observed to take place within fifteen minutes in mixtures of glucose, sucrose and the concentrated salivary debris of persons with caries. Various raw carbohydrates have been shown to be converted to acid by saliva at rates similar to those observed for refined sugars.

Prevention of Dental Caries by Brushing the Teeth With Powders Containing Fluorapatite. J. F. McClendon, William C. Foster and N. Volney Ludwick.

In this study it was found that brushing rats' teeth daily with powdered Tennessee brown rock phosphate decreased the incidence of dental caries in rats on a cracked yellow corn and skimmed milk powder diet.

The authors point out that the toxicity of fluorine for adults is greatly exaggerated, probably because the mottling of developing teeth is interpreted as toxicity. Roentgenographic studies showed no effects of ingestion of a gram per day of Tennessee brown rock phosphate by an adult for three years. Most of the fluorine from rock phosphate is unabsorbed when swallowed by human beings, but some is deposited in the teeth, as analysis of extracted teeth has proved.

It was found that there was less new caries in one year in teeth of medical students brushing their teeth with powdered rock phosphate or "synthetic fluorapatite" than in the teeth of the controls.

A Note on the Mechanism of Fluoride Fixation. Marlene Falkenheim and Harold C. Hodge.

When powdered bone samples marked with P_{32} were exposed to neutral aqueous solutions containing fluoride ions, fluoride was fixed by the bone. The mechanism of fluorine adsorption probably does not involve exchange with phosphate since no more P_{32} went from bone to solution than was found in the absence of fluoride ions.

A Study of the Action of Antibiotics in Vitro on Microorganisms Isolated From Root Canals. R. S. Tulacek and E. B. Tilden.

Fifty-one cultures of oral micro-organisms were isolated in pure culture and tested individually for their resistance or susceptibility to penicillin (in amounts up to 10 units per milliliter) and streptomycin (in amounts up to 100 units per milliliter). With the exception of the s.b.e. streptococcus, all the nonhemolytic streptococci were represented in the series. Of the twenty-eight streptococci isolated, six showed marked resistance to one or both antibiotics. These were Str. faecalis, Str. liquefaciens, Str. salivarius, Str. mitis, Str. equinus and Str. bovis, one culture of each. The culture of Str. faecalis was outstanding in its resistance to both antibiotics. Seven lactobacilli isolated showed considerable resistance to penicillin, and when lactobacilli and streptococci were mixed, the resistance of the mixture was much greater than that of pure cultures of either organism. One gram-negative rod was resistant to penicillin but susceptible to streptomycin, and one yeast and an unidentified rod were resistant to both. The staphylococci and micrococci behaved much like the standard Heatley staphylococcus.

The difficulty of evaluation of penicillin and streptomycin for use in dental infections is indicated by the results described. The resistance of mixtures of lactobacilli and streptococci emphasizes the importance of bacteriologic control in root canal treatment with penicillin.

Tobacco and Gingivitis. I. Statistical Examination of the Significance of Tobacco in the Development of Ulceromembranous Gingivitis and in the Formation of Calculus. J. J. Pindborg.

Statistics based on examinations of 1,433 Royal Danish Marines show that the more one smokes the greater is the chance of developing an ulceromembranous gingivitis and that the deposition of calculus is affected by the consumption of tobacco. From examination of 2,432 Marines, deposition of calculus appears to be associated with development of gingivitis.

The Effect of Age and Region of Birth Upon the Relative Number of Naval Personnel Having Dental Prosthetic Replacements. C. A. Schlack, J. P. Flynn and L. J. Gerende.

The dental records of some 70,000 men entering the Navy in 1942, when rigid naval dental standards were still in effect, have been examined to determine the effect of age and region of birth on the relative number of dental replacements. This sample unfortunately was not entirely confined to those persons meeting the naval dental requirements but included also members of the Fleet Reserve. Despite this lack of homogeneity in the sample, the following conclusions may be drawn: The relative number of personnel having either partial upper replacements only, partial lower replacements only, partial upper and partial lower replacements or gold crowns increases with age. The number having either jacket crowns, post crowns, removable bridges or fixed bridges increases until approximately 35 years of age and then decreases beyond that time. In this sample as high as 14 per cent of the older age groups have fixed bridges and gold crowns. The other types of dentures mentioned are found in less than 4 per cent of any age group.

The present study also showed that persons born in the west south central region of the United States have fewer fixed bridges and gold crowns than those born in other regions of the United States and that upper teeth are replaced more frequently than lower teeth.

A Study on Reattachment of the Supporting Structures of the Teeth. Frank E. Beube. J. Periodont. 18:55, April 1947.

As a continuation of previous studies published in 1936, the author reports animal and human experimentation in the healing of periodontal lesions. He questions the often repeated statements that periodontal lesions never heal and that the tissues never are reattached to the tooth. In a series of 7 dogs periodontal lesions were surgically produced and biopsies were made at intervals over a period of two years. Healing processes were observed identical with the healing of injuries in soft tissues,

and islands of bone developed which coalesced to form new cementum and alveolar bone. At the end of two years the formation of apparently normal periodontal tissues with physiologic attachment to the tooth had occurred.

Ten cases of human periodontoclasia were studied in which the supporting tissues were seriously involved and the lesions extended to the apical third of the roots. Six had vertical lesions and 4 had horizontal bony involvement. The depth of the pockets was measured, and roentgenograms were taken with varying degrees of exposure (one, two, three and four seconds, respectively) to avoid error through artefacts resulting from overexposure or underexposure.

All patients were treated by conservative measures and in 5 apparent reattachment was clinically evident and a new growth of alveolar bone was seen roentgenographically. In the 5 cases that failed to respond, boiled cow-bone powder was introduced into the lesions and subsequent healing was effected.

From roentgenographic evidence and measurements of the pockets by means of millimeter probes at various intervals for from one to twelve years, it was found that the pockets were eliminated in all ten patients treated; loose teeth became firm and new bone formation was apparent. The amount of new bone formation varied from one-half to two-thirds the length of the root. The average length of time required for new bone to be formed was ten months.—*R.W.B.*

Dental Caries Experience in Postwar Italy (1945). Maury Massler and Isaac Schour. J. Dent. Children 14:6, Third Quarter, 1947.

In order to determine the relation between malnourishment and dental caries, the authors studied 141 Italian children, 6 to 14 years of age, who during the war period had been definitely underfed. These children were hospitalized and suffered from various chronic disorders: rickets, nutritional edema, tuberculosis and general undernourishment.

Dental examinations showed that these children had 30 per cent more caries than Neapolitan children (6 to 15 years of age) but less than half that of children in Hagerstown, Md. (6 to 14 years of age). The Italian children had caries that was slow growing and localized, and only 2.5 per cent had rampant caries. Among the hospitalized children 31 per cent were caries free and among the children outside hospitals 42 per cent had no dental caries.

There was some evidence that caries increased in the presence of active illness, but no conclusive data were obtained. The authors state that their findings do not support the view that good nutrition is essential to protection against dental caries. They call attention to the low intake of refined sugars as a possible factor in low caries prevalence, although the starch content of the diet was high and the amount of proteins, fats, minerals and vitamins was low.—*R.W.B.*

Method for Making More and Better Dental Services Available to Children. Kenneth A. Easlick. J. Dent. Children 14:9, Second Quarter, 1947.

In view of the growing demand for dentistry for children, the author discusses the need for and methods of obtaining increased dental training in that field on the undergraduate, postgraduate and graduate levels. He states that most schools are devoting more and more attention to child dental health in the undergraduate curriculum, but those dentists who have graduated 5 to 50 years ago need further training in this service. The following teaching objectives are mentioned: behavior management; specific clinical technics for deciduous teeth; diagnosis and understanding of child health problems, and dental health education for parent and child. Added to these are more advanced courses in public health methods for those who engage in teaching, research or directing health programs.

Two forms of training are discussed: the graduate program for the child specialist and the postgraduate instruction for general practitioners. The graduate program includes histology, nutrition, bacteriology, psychology and mental hygiene, pediatrics, operative technics, clinical experience in health problems and a graduate thesis. The training requires full time study for at least one year and should lead to a graduate degree.

For the general practitioner, postgraduate courses of intensive study for not less than two weeks should be provided. A one day a week program for one or two semesters also may be offered. Such instruction should consist of lectures, staff demonstrations and personal operative experience on patients under staff supervision. All three stages of instruction are essential.—*R.W.B.*

The Carious Tooth as a Portal of Entry for Poliomyelitis. H. H. Reese and J. G. Frisch. Indust. Med. 16:145, March 1947.

Clinical evidence reveals a high frequency of bulbar infections of the neural axis among persons submitting to tonsillectomy or extraction of teeth at the time of poliomyelitis epidemics. This evidence is thought to indicate that surgical operations expose nerve endings, permitting transmission of the virus toward the nuclear cells of the facial, oculomotor, trigeminal, vestibular and vagal nerves.

Evidence, including autopsies of human beings and experiments with monkeys, is presented to bear out the above mentioned contention. It is not necessary that actual pulp exposure be present to permit access of the virus to the base network of nerve tissues of the dental pulp. Exposed dentinal tubules present a pathway from sixty to two hundred fifty times greater in diameter than is necessary to permit the passage of the virus.

The authors make an urgent plea to parents, physicians and dentists to support all scientific measures for the inhibition of dental caries and to seal off these invasion foci during the early summer months in the hope that the incidence of poliomyelitis may at least be reduced.—*Hyman Goldberg.*

Penicillin in Intraoral Lesions. H. Ackers. Brit. D. J. 82:202, May 1947.

Penicillin in paste or lozenge form was used in the treatment of a wide variety of conditions, such as acute ulcerative gingivitis, all types of extractions, and fractures. It is noted that the penicillin preparations can safely be buried in intra-oral tissue, and the complete closing of wounds by suturing can be accomplished with the expectation of primary healing. Penicillin is a valuable adjunct in the treatment of acute ulcerative gingivitis but is of no curative value in idiopathic recurrent ulcerative stomatitis. Finally it is pointed out that penicillin is only an adjunct to good medical and surgical care.—*G. W. Burnett.*

Characteristic Morphological Changes in Bacillus Fusiformis in the Course of Penicillin Treatment. Hilde Frey. Brit. D. J. 82:135, April 1947.

On routine examination of the smears of 224 patients with ulcerative stomatitis who were treated with penicillin, 62 showed morphologic changes in the fusiform bacilli. Of the 224 patients, 59 were treated with a penicillin solution, 47 with solution and lozenges and 118 with lozenges alone. Morphologic changes were not found in those patients treated by the solution alone. Generally, the change in form of the fusiform bacillus consisted of central swellings, spherical or spindle shaped, two to four times the normal breadth of the organism. Swellings were also noted to be lateral, subterminal and bipolar. The morphologic changes generally appear after twenty-four hours of treatment, and the organisms are not demonstrable after forty-eight hours. Pleomorphism is attributed to cytoplasmic changes resulting from the penicillin.—*G. W. Burnett.*

A Reverse Approach to the Fluorine-Dental Caries Hypothesis. R. A. Downs and F. S. McKay. Am. J. Pub. Health 36:1307, November 1946.

The paradoxical existence of a high dental caries rate in an area (Montrose, Colo.) with a water supply containing 1.4 parts per million of fluorine necessitated this study. The only conclusion that could be drawn from this study was that the report which gave the fluorine content of the city water as 1.4 p.p.m. fluorine was in error. This was established through a later analysis which revealed that the correct fluorine content was 0.3 p.p.m. The reverse approach set forth in this present study is of particular interest in that, for the first time the authors believe, a high caries rate in a community has been used as an index of a low fluorine content in the public water supply. —*Hyman Goldberg.*

Use of Tantalum for Facial and Cranial Defects. J. Neuman. Am. J. Surg. 73:499, April 1947.

The search for a metal or a metallic alloy suitable for tissue replacement has been going on since the sixteenth century. Although gold, silver, steel, aluminum, magnesium, brass and Vitallium have all been used, they are all oxidized in body fluids, provoking foreign body response and showing high electrolytic reaction. The most serviceable metal in this group is Vitallium, which prior to the introduction of tantalum was used most successfully.

Tantalum seems to be the best metal available now for the repair of cranial and facial defects. It is an element with many unique but very favorable properties. It is blue-gray in color, has the characteristics of mild steel, is ductile and workable in its annealed state and is biologically inert.—*Hyman Goldberg.*

LIST OF DENTAL OFFICERS

SEPARATED FROM ARMY DENTAL CORPS

THE following list of dental officers separated from the Army Dental Corps does not include rank because such information is no longer furnished by the Surgeon General's Office. Publication will be given to other names as soon as possible.

Arizona	
Yuma	Hume, Bruce W., Jr.
Arkansas	
Morrilton	Black, DeWitt T., Jr.
Bermuda	
Pembroke	Byron, Hubert H.
California	
San Diego	Wallace, John M.
San Francisco	Trimble, William H.
San Leandro	Rickey, Louis P.
South Pasadena	Roberts, Clifford M.
Colorado	
Colorado Springs	Ritchey, Beryl T.
Connecticut	
Bridgeport	Russo, Francis J.
Hartford	Luntz, Benjamin
Norwich	Goldblatt, Louis B.
Florida	
Miami	Loveman, David
Tampa	Torres, John J.
Georgia	
Atlanta	Parker, Randolph E.
Idaho	
Caribou	Tigert, Mack
Illinois	
Aurora	Lee, Richard A.
Berwyn	Ott, John H.
Chicago	Champion, William O.
Chicago	LaFond, Leon D.
Chicago	Sarsoun, Charles L.
Evanston	Kitzmiller, Elmore F.
Highland Park	Black, Robert H.
Kincaid	Sullivan, Robert H.
Maywood	Topel, Paul A.
Indiana	
Ft. Wayne	Schoenherr, Eldo H.
Ligonier	Baker, James L.
Iowa	
Anamosa	Trevarthen, John A.
Charles City	Riordan, Robert E.
Davenport	Shank, Elmer L.
Des Moines	Lobaugh, John P.
Greenfield	Reynolds, Robert P.
Spencer	Larson, Leonard
Kentucky	
Benham	Martin, Charles M.
Olive Hill	Rose, Gilbert M.
Louisiana	
Bunkie	LaPrairie, Joseph O.
Iowa	St. Romain, Chester A.
Mansura	Bergeron, Normand A.
Many	Tramel, Charley B.
New Orleans	Quartano, George M.
Shreveport	Lowe, John T.
Maine	
Bangor	Lichenstein, Herbert A.
Maryland	
Baltimore	Loewenson, Albert S., Jr.
Massachusetts	
Arlington	Coughlin, Francis B.
Malden	Klickstein, David
Michigan	
Grand Rapids	Rickle, Fred M.
Kalamazoo	Sargent, Donald K.
Minnesota	
Cloquet	Tomhave, Elmer J. G.
Minneapolis	Larson, Harry O.
Minneapolis	Styer, Donald J.
Minneapolis	Tritle, James L.
St. Paul	Mason, Ralph W.
Mississippi	
Wesson	Purvis, Milton D.
Missouri	
Richmond Heights	Handler, Lister
Sturgeon	Street, Zeph W.
Webster Groves	Alderson, Ralph
Nebraska	
Omaha	Bukacek, Bud J.
Omaha	Rich, Harry
New Jersey	
Camden	Eisenberg, Irvin L.
Camden	Kowalski, Stanley J.
Elizabeth	David, Arthur B.

Newark	Siegel, Daniel
Teaneck	Traina, Emil P.
Trenton	Lavine, Joseph B.
Trenton	Weston, Oscar
New Mexico	
Albuquerque	Richmond, Earl S.
New York	
Bronx	Lace, William P.
Bronx	Temchin, Meyer
Brooklyn	Martin, Myron
Brooklyn	Passer, Jerome
Brooklyn	Pobiner, Mervin W.
Brooklyn	Radziewicz, Henry S.
Brooklyn	Teltsch, Edward E.
Buffalo	Burstein, Max W.
Buffalo	Goldsman, Samuel
Buffalo	Krzyzanowski, William M.
Buffalo	Rick, Charles J.
Cahoes	Marra, Harry W. L.
De Witt	Craner, Robert C.
Jamaica	Sapirstein, Robert
Kingston	Goldfarb, Herbert L.
Lockport	Schutt, Robert C.
Long Island	Lindner, Manuel
Long Island	Mason, Rodney J.
Long Island	Weston, Michael E.
New York	Fleischman, Herbert A.
New York	Krinsky, Malvin M.
New York	Lefford, Arthur
New York	Levin, Alexander S.
New York	Marshall, Alexander
New York	Rosen, Bernard
New York	Rousseau, Earl B.
New York	Schein, Samuel T.
New York	Schneider, Alfred
New York	Steinberg, Robert J.
New York	Tashma, Joseph
New York	Toporoff, Lawrence
Patchogue	Lifschitz, Joseph R.
Pelham	Leonard, William F.
Rego Park	Mintz, Murray
Rochester	Gerbasi, Harry J.
South Ozone Park	Longhitano, Salvatore J.
North Carolina	
Lansing	Barr, Roger F.
Ohio	
Alliance	Greiner, Joseph C., Jr.
Cincinnati	Greene, George W., Jr.
Rock Creek	Branch, James F.
Oklahoma	
Mooreland	Triplett, Ralph L.
Wynne Wood	Rhodes, William L.
Oregon	
Portland	Lowe, Glen L.
Pennsylvania	
Philadelphia	Buggy, Vincent T., Jr.
Philadelphia	Kupers, Charles B.
Philadelphia	Rezet, Benjamin G.
Philadelphia	Rossiter, William S.
Philadelphia	Saull, Sidney
Philadelphia	Skilton, Joseph D.
Philadelphia	Travaglini, Edmund A.
Pittsburgh	Bell, Robert M.
Pittsburgh	Klewans, James M.
Wilkes-Barre	Lubin, David M.
Puerto Rico	
Salinas	Munoz, Jorge E.
Tennessee	
Woodbury	Campbell, Walter H.
Texas	
Dallas	Sharp, Terrill H.
Denton	Saunders, Charles H.
Henderson	Massey, John T.
Port Arthur	McCullen, Murff
Utah	
Logan	Sorenson, James K.

LIST OF DENTAL OFFICERS

SEPARATED FROM NAVY DENTAL CORPS

THE following naval dental officers have been separated from service, according to lists received from the Navy Department. These lists are not complete. Other names will be published as soon as possible.

Arkansas		
Fort Smith	Klusmeier, William W.	Lieut.
California		
Berkeley	Brody, David	Lieut.
Lynwood	Carter, William L.	Lieut.
Connecticut		
South Norwalk	Glazer, William	Lieut.
Waterbury	Mandino, Paul V.	Lieut.
Illinois		
Berwyn	Rachlin, Fredrick P.	Lieut.
Calumet City	Bona, Richard A.	Lieut.

Chicago	Kodosh, Milton M.	Lieut.
Elgin	Blackman, Warne L.	Lieut.
Indiana		
Kokomo	Ricketts, James A.	Lieut.
Terre Haute	Croxton, William L.	Lieut.
Iowa		
Charles City	Miller, William A.	Lieut.
Cumberland	Arnold, Wililam G.	Lieut.
Maryland		
Silver Spring	Cicala, John J.	Lieut.
Massachusetts		
Boston	Nathan, Jerome R.	Lieut.
Great Barrington	Hassett, John E.	Lieut.
New Bedford	Durant, Robert E.	Lieut.
Somerville	Sharry, Thomas P.	Lieut.
Michigan		
Detroit	Meyers, Edward	Lieut.
Flint	Micinski, Alfred L.	Lieut.
Jackson	Johnson, Blaine B.	Lieut.
Minnesota		
Hibbing	Perell, Bruno A.	Lieut.
Minnesota Lake	Townsend, Ralph V.	Lieut.
Thief River Falls	Arhart, Vincent H.	Lieut.
Mississippi		
Jackson	Sanders, John S.	Lieut.
Missouri		
Clayton	Dann, John J., Jr.	Lieut.
Nebraska		
Lincoln	Yates, Dean D.	Lieut.
Omaha	Buda, Samuel C.	Lieut.
New Hampshire		
Dover	Wiseman, Louis	Lieut.
New Jersey		
Red Bank	Copperthwaite, William H.	Lieut.
New York		
Auburn	Bennett, Paul W.	Lieut.
Bronx	Divack, Morton L.	Lieut.
Bronx	Largey, John F.	Lieut.
Brooklyn	Montalbano, Leonard	Lieut.
Brooklyn	Raccuia, Alfred J.	Lieut.
Jackson Heights	Rosenzweig, Louis B.	Lieut.
Johnson City	Lacey, Robert R., Jr.	Lieut.
Johnson City	Sullivan, Richard J.	Lieut.
Lake Placid	Madden, Robert F.	Lieut.
Long Island	DeVita, Gregory F.	Lieut.
New York	Berkey, Robert	Lieut.
New York	Kaplan, Benjamin	Lieut.
New York	Pessin, Sherman	Lieut.
New York	Stimpfle, Robert J., Jr.	Lieut.
New York	Tendler, Meyer	Lieut.
Queens	Gargiulo, Albert L.	Lieut.
Whitehall	Reid, John W.	Lieut.
North Carolina		
Concord	Ezzell, John W.	Lieut.
Forest City	Abernethy, Charles V.	Lieut.
Newell	Stroup, Paul A.	Lieut.
Raleigh	Gold, Henry	Lieut.
Salisbury	Woodward, Walter F.	Lieut.
Salisbury	Young, David C., Jr.	Lieut.
North Dakota		
Norwich	Kringlee, Allen E.	Lieut.
Ohio		
Canton	Deetz, Robert F.	Lieut.
Cincinnati	Marcus, Joseph, Jr.	Lieut.
Cleveland	Schermer, Marvin	Lieut.
Cleveland Heights	Sacks, William C., Jr.	Lieut.
Columbus	Jones, Lawrence J.	Lieut.
Columbus	Parish, Vernon W.	Lieut.
Columbus	Zlatkind, Hamel	Lieut.
Kinsman	Meikle, Wallace M.	Lieut.
Struthers	Spagnola, Alfred D.	Lieut.
Wickliffe	Trattner, Robert E.	Lieut.
Oklahoma		
Tulsa	McElwaine, Laurence P.	Lieut.
Pennsylvania		
Drexel Hill	Weidman, Allen F.	Lieut.
Hokendauqua	Newhart, Carl K.	Lieut.
Philadelphia	Kessler, Paul	Lieut.
Philadelphia	Lawrence, William E., Jr.	Lieut.
Philadelphia	Leberman, Odin F.	Lt. Cmdr.
Reading	Yost, Robert S.	Lieut.
Robesonia	Driesbach, Gilbert H.	Lieut.
Wilkes-Barre	Brown, Adolf	Lieut.
Rhode Island		
Westerly	Turco, Frank E.	Lieut.
Tennessee		
Memphis	Page, Millard E.	Lieut.
Murfreesboro	Jenkins, Charles T.	Lieut.
Shelbyville	Gilbert, Warren R.	Lieut.
Texas		
Canadian	Meeks, Stanley	Lieut.
Dallas	Aronofsky, David H.	Lieut.
Nederland	Broussard, Clifford J.	Lieut.
Vermont		
Barton	Buck, Ralph N.	Lieut.
West Rutland	Wysomerski, Sigismund S.	Lieut.
Wisconsin		
Kenosha	Dowe, Gerald L.	Lieut.
Madison	Moore, Robert H.	Lieut.
Marshfield	Lueck, John F.	Lieut.
Milwaukee	Dorn, George C.	Lieut.
Milwaukee	Keith, Robert A.	Lieut.
Sheboygan	Cone, Herbert E.	Lieut.
Stevens Point	Lange, Emert R.	Lieut.

DEATHS

Ball, James W., Battle Creek, Iowa; College of Dentistry, University of Iowa, 1911; died August 20; aged 63.

Barrett, William Z., Woodbridge, N. J.; Philadelphia Dental College, 1899; died August 26; aged 75.

Bayly, Guy F., Chicago; Pittsburgh Dental College, Western University of Pennsylvania, 1905; died September 20; aged 62.

Birkett, M. J. Barry, East Liverpool, Ohio; died August 20; aged 62.

Bliss, Louis L., Chicago; Dental School, Northwestern University, 1903; died September 9; aged 78.

Bonham, Frank V., Herrin, Ill.; School of Dentistry, St. Louis University, 1921; died August 29; aged 57.

Boylan, Patrick W., Fall River, Mass.; Baltimore College of Dental Surgery, 1905; died September 2.

Bruce, Wallace W., New York; College of Dentistry, National University, 1898; died September 15.

Burns, Robert S., Chicago; Chicago College of Dental Surgery, 1914; died September 10; aged 59.

Burt, Samuel S., Bradford, Pa.; Baltimore College of Dental Surgery of the University of Maryland, 1900; died August 12; aged 76.

Caswell, H. E., Tampa, Fla.; Ohio College of Dental Surgery, Dental Department, University of Cincinnati, 1902; died August 16; aged 75.

Christensen, Nels C., Omaha, Neb.; Omaha Dental College, Dental Department, University of Omaha, 1902; died August 20.

Courtney, Charles H., Sr., Sumter, S. C.; Baltimore College of Dental Surgery of the University of Maryland, 1908; died September 1; aged 71.

Crane, Arthur B., Washington, D. C.; School of Dentistry, University of Pennsylvania, 1899; died August 23; aged 70.

Dale, George, Grove City, Pa.; School of Dentistry, University of Pittsburgh, 1900; died August 17.

Denhard, G. Wallace, Louisville, Ky.; School of Dentistry, University of Louisville, 1935; died in September; aged 39.

Diffenbacher, J. L., Sapulpa, Okla.; State Dental College, 1909; died August 8; aged 60.

Dixon, Arthur P., Cumberland, Md.; Baltimore College of Dental Surgery, 1911; died August 5; aged 61.

Dodson, Joseph A., Maysville, Ky.; Ohio College of Dental Surgery, University of Cincinnati, 1900; died August 17; aged 70.

Eggers, Joseph, Two Rivers, Wis.; Chicago College of Dental Surgery, 1896; died August 17; aged 76.

Flaugher, Bruce D., Toledo, Ohio; Ohio College of Dental Surgery, Dental Department, University of Cincinnati, 1903; died September 7; aged 64.

Foster, Sheppard W., St. Petersburg, Fla.; School of Dentistry, Vanderbilt University, 1887; died August 16; aged 86.

Fox, George T., Chicago; died September 15; aged 66.

Friedman, Morris L., Dallas, Texas; died August 20; aged 43.

Goldsmith, Jules M., Detroit; Dental School, Marquette University, 1928; died September 5; aged 42.

Gordon, John S., Avon, Ill.; Chicago College of Dental Surgery, 1909; died August 28; aged 66.

Hess, Fred E., Fairmont, W. Va.; Ohio College of Dental Surgery, University of Cincinnati, 1909; died August 18; aged 65.

Hill, T. B., Sr., Montgomery, Ala.; Dental Department, Tennessee Medical College, 1893; died July 27; aged 74.

Hixson, Peter E., Athens, Ohio; College of Dentistry, Ohio Medical University, 1904; died August 26; aged 69.

Holic, Richard, Chicago; College of Dentistry, University of Illinois, 1939; died September 4; aged 32.

Jackson, Robert A., Lorain, Ohio; Cincinnati College of Dental Surgery, 1901; died August 21; aged 86.

Jantzen, Joseph W., Lowell, Mass.; Tufts College Dental School, 1913; died August 17.

Keeley, Joseph F., Bridgeport, Conn.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1912; died August 20.

Langley, Charles C., Salt Lake City; Denver College of Dentistry, 1900; died July 3; aged 67.

Lena, Frank A., New London, Conn.; Dental Department, Baltimore Medical College, 1907; died June 23; aged 63.

Levin, Samuel C., St. Paul; School of Dentistry, University of Minnesota, 1929; died August 9; aged 42.

Lewis, Charles, Seattle; School of Dentistry, University of Buffalo, 1902; died August 30; aged 69.

Logan, Horace G., Sheridan, Ill.; died July 27; aged 88.

Lombard, John B., Boston; died September 4.

DIRECTORY

Officers

H. B. Washburn, President.....Lowry Bldg., St. Paul
Clyde E. Minges, President-Elect.....Peoples Bank Bldg., Rocky Mount, N. C.
Philip E. Adams, First Vice-President.....106 Marlborough St., Boston
Fred A. Richmond, Second Vice-President.....Huron Bldg., Kansas City, Kan.
A. M. Smith, Jr., Third Vice-President.....Stovall Bldg., Tampa, Fla.
Harold Hillenbrand, Secretary.....222 E. Superior St., Chicago
R. H. Volland, Treasurer.....First National Bank Bldg., Iowa City

Board of Trustees

LeRoy M. Ennis, 1950, Third District.....4001 Spruce St., Philadelphia
Harold W. Oppice, 1950, Eighth District.....1002 W. Wilson Ave., Chicago
O. H. Moen, 1950, Ninth District.....Watertown, Wis.
Daniel F. Lynch, 1950, Fourth District.....1678 Primrose Road, N. W., Washington, D. C.
J. E. John, Sr., 1950, Fifth District.....804 Medical Arts Bldg., Roanoke, Va.
J. B. Carr, 1949, Seventh District.....Hume Mansur Bldg., Indianapolis
C. S. Foster, 1949, Tenth District.....Dows Bldg., Cedar Rapids, Iowa
Robert P. Thomas, 1949, Sixth District.....Francis Bldg., Louisville, Ky.
Henry Hicks, 1949, First District.....5 Glen Court, Greenwich, Conn.
William McGill Burns, 1948, Second District.....80 Hanson Place, Brooklyn
Willard Ogle, 1948, Twelfth District.....Medical Arts Bldg., Dallas, Texas
Fred S. Shandley, 1948, Eleventh District.....Medical & Dental Bldg., Seattle
R. C. Dalgleish, 1948, Thirteenth District.....124 State Capitol, Salt Lake City

Bureaus

Chemistry: Donald A. Wallace, Director, and J. Roy Doty, Senior Chemist, 222 E. Superior St., Chicago.

Library and Indexing Service: Murrell Wellman, Librarian, and Josephine P. Hunt, Assistant Librarian, 222 E. Superior St., Chicago.

Public Information: Herbert B. Bain, Director, 222 E. Superior St., Chicago.

Section Chairmen

Dentistry for Children and Oral Hygiene: Robert A. Downs, Colorado State Department of Health, State Office Bldg., Denver.

Full Denture Prosthesis: Homer Simpson, Medical Arts Bldg., Dallas, Texas.

Histology, Physiology, Pathology, Bacteriology and Chemistry (Research): Basil G. Bibby, Eastman Dental Clinic, Rochester, N. Y.

Hospital Dental Service: W. Harry Archer, Professional Bldg., Pittsburgh.

Operative Dentistry, Materia Medica and Therapeutics: Ernest R. Granger, 149 Prospect Ave., Mt. Vernon, N.Y.

Orthodontics: Francis W. Nash, Medical Arts Bldg., Scranton, Pa.

Partial Denture Prosthesis: A. O. Klaffenbach, 226 River St., Iowa City.

Periodontia: Harold J. Leonard, 745 Fifth Ave., New York.

Practice Management: Gaylord J. James, 9400 Euclid Ave., Cleveland, Ohio.

Radiology: L. R. Main, 3556 Caroline St., St. Louis 4.

Standing Committees

American Red Cross: George A. Coleman, Chm., 15th and Locust Sts., Philadelphia.

Constitution and Administrative Bylaws: Percy T. Phillips, Chm., 18 E. 48th St., New York.

Dental Education: Wilbert Jackson, Chm., Clinton, N. C., Harlan H. Horner, Secy., and Shailer Peterson, Director of Educational Measurements, 222 E. Superior St., Chicago.

Dental Health: Hugo M. Kulstad, Chm., First National Bank Bldg., Pomona, Calif.; Allen O. Gruebbel, Secy., 222 E. Superior St., Chicago.

Dental Legislation: Carl O. Flagstad, Chm., Medical Arts Bldg., Minneapolis; George H. Fox, Secy., 222 E. Superior St., Chicago.
Dental Museum: Henry A. Swanson, Chm., 1726 Eye St., N. W., Washington, D. C.; Joseph L. Bernier, Secy., Army Institute of Pathology, Washington, D. C.
Dental Therapeutics: Thomas J. Hill, Chm., Western Reserve University, Cleveland; Donald A. Wallace, Secy., 222 E. Superior St., Chicago.
Economics: Lealie M. FitzGerald, Chm., Roshek Bldg., Dubuque, Iowa; J. E. Bagdonas, Secy., 222 E. Superior St., Chicago.
History: Harold L. Faggart, Chm., 2120 Pine St., Philadelphia.
Insurance: A. D. Weakley, Chm., 1726 Eye St., N. W., Washington, D. C.; Fred A. Richmond, Secy., Huron Bldg., Kansas City, Kan.
International Relations: Stanley D. Tylman, Chm., 55 E. Washington St., Chicago.
Judicial Council: Ernest G. Sloman, Chm., 344-14th St., San Francisco.
Library and Indexing Service: John E. Gurley, Chm., 350 Post St., San Francisco.
Membership: Paul W. Zillmann, Chm., 29 Walden Ave., Buffalo; Harold Hillenbrand, Secy., 222 E. Superior St., Chicago.
Military Affairs: Robert T. Curren, Chm., Illinois Bldg., Springfield, Ill.
Motion Pictures: Cecil C. Connelly, Chm., 4660 Maryland Ave., St. Louis.
National Board of Dental Examiners: W. H. Crawford, Chm., School of Dentistry, University of Minnesota, Minneapolis; Gordon L. Teall, Secy., Hiawatha, Kan.
Nomenclature: Harry Lyons, Chm., Professional Bldg., Richmond, Va.
Patents and Honorary Awards: M. D. K. Bremner, Chm., 173 W. Madison St., Chicago; Frederick C. Baker, Secy., Calumet Bldg., Hammond, Ind.
Prosthetic Dental Service: F. W. Herbine, Chm., 230 N. Fifth St., Reading, Pa.; Earl M. Eaton, Secy., American Trust Bldg., Cedar Rapids, Iowa.
Relief: Thomas R. Cullen, Chm., 189 W. First St., Oswego, N. Y.; L. H. Jacob, Secy., Jefferson Bldg., Peoria, Ill.
Research: M. D. Huff, Chm., Medical Arts Bldg., Atlanta, Ga.; Charles B. Hall, Secy., 1835 Eye St., N. W., Washington, D. C.
Scientific and Health Exhibits: Leo F. Marré, Chm., Paul Brown Bldg., St. Louis.

Special Committees

Dental and Medical Relations: Louis T. Austin, Chm., Mayo Clinic, Rochester, Minn.
Horace Wells Centenary: Eugene M. Clifford, Chm., 57 Pratt St., Hartford, Conn.
Hospital Dental Service: W. Harry Archer, Chm., Professional Bldg., Pittsburgh.
Trade Relations: Edward J. Jennings, Chm., 126 W. State St., Trenton, N. J.
War Memorial: Louis H. Renfrow, Chm., Selective Service, 21st and C Sts., N. W., Washington, D. C.

THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois
WHItehall 6730 Cable Address: ADAECO

Leo W. Morrey, Editor **John J. Hollister, Business Manager**

All expressions of opinions and all statements of supposed facts are published on the authority of the writer over whose signature they appear, and are not to be regarded as expressing the views of the American Dental Association, unless such statements or opinions have been adopted by the Association. *Articles* are accepted with the understanding that they have not been published previously and that they are submitted solely to THE JOURNAL. *Advertising:* All products coming within the scope of the Council on Dental Therapeutics of the American Dental Association must be acceptable to the Council in order to be advertised in THE JOURNAL. Subscription is included in the annual membership dues of the American Dental Association. The subscription rate is $7 a year payable in advance for domestic subscriptions and $8 a year for foreign subscriptions. *Notice of change of address* should be received one month before the change is to be effective.

ANNOUNCEMENTS

MEETINGS OF STATE SOCIETIES

State	Date	Place	Secretary	Address
Alabama	April 15–17, 1948	Birmingham	G. W. Matthews	1922 Tenth Ave., S., Birmingham 5
Arizona			B. K. Litt	68 E. Congress, Tucson
Arkansas			I. M. Sternberg	Merchants Bank Bldg., Ft. Smith
California	April 26–28, 1948	San Francisco	L. E. Linehan	450 Sutter St., San Francisco
S. California			M. E. Ralston	903 Crenshaw Bldg., Los Angeles 6
Colorado			R. A. Downs	724 Republic Bldg., Denver 2
Connecticut			E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			J. Krygier	309 S. State St., Dover
D. of Columbia			K. H. Wood	202-1835 Eye St., N.W., Washington
Florida	Nov. 10–12	St. Petersburg	J. I. Todd	433 St. James Bldg., Jacksonville
Georgia			J. M. Heard, Jr.	Persons Bldg., Macon
Hawaii	Oct. 30–Nov. 1	Honolulu	J. H. Dawe	P. O. Box 39, Honolulu 10
Idaho			R. Sutcliff	Twin Falls
Illinois			P. W. Clopper	623 Jefferson Bldg., Peoria 2
Indiana			E. E. Ewbank	Kingman
Iowa			A. N. Humiston	417 Higley Bldg., Cedar Rapids
Kansas			F. A. Richmond	1008 Huron Bldg., Kansas City
Kentucky	April 5–7, 1948	Louisville	J. L. Walker	640 Barbee Way, S., Louisville
Louisiana	April 8–10, 1948	Alexandria	J. S. Bernhard	407 Medical Arts Bldg., Shreveport
Maine			A. H. Garcelon	State House, Augusta
Maryland	May 3–5, 1948	Baltimore	J. H. Shackelford	706 Baltimore Life Bldg., Baltimore 1
Massachusetts	May 3–6, 1948	Boston	P. E. Adams	227 Commonwealth Ave., Boston 16
Michigan	April 12–14, 1948	Detroit	F. Wertheimer	Michigan Department of Health, Lansing
Minnesota	Feb. 23–25, 1948	St. Paul	L. M. Cruttenden	Lowry Medical Arts Bldg., St. Paul
Mississippi			F. C. Sneed	Osyka
Missouri	April 26–28, 1948	Jefferson City	C. W. Digges	Exchange National Bank Bldg., Columbia
Montana			C. S. Renouard	305 Phoenix Bldg., Butte
Nebraska			F. A. Pierson	Federal Securities Bldg., Lincoln
Nevada			L. G. Jacob	505 Chestnut St., Reno
New Hampshire			F. E. Williams	814 Elm St., Manchester
New Jersey	April 20–23, 1948	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico			J. S. Eilar	First National Bank Bldg., Albuquerque
New York	May 10–13, 1948	Syracuse	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	April 26–28, 1948	Asheville	C. W. Sanders	Benson
North Dakota			A. L. Smeby	Northwood
Ohio	Nov. 9–12	Cleveland	E. G. Jones	185 E. State St., Columbus
Oklahoma			E. W. Wise	Medical Arts Bldg., Tulsa
Oregon			W. H. Hurley	922 Selling Bldg., Portland 5
Panama Canal Zone			T. W. Cagle	Box 243, Cocoli
Pennsylvania	May 11–13, 1948	Atlantic City, N.J.	E. R. Aston	421 Market St., Kingston
Philippine I.			G. A. Carreon	9 Broadway, Third St., N. Manila
Puerto Rico			R. Miranda	Box 747, Rio Piedras
Rhode Island			S. Ozarin	172 Thames St., Newport
South Carolina			J. R. Owings	201 E. North St., Greenville
South Dakota	May 9–11, 1948	Sioux Falls	E. W. Elmen	Sioux Falls
Tennessee	May 24–27, 1948	Memphis	E. J. Justis	Exchange Bldg., Memphis
Texas	April 12–15, 1948	Fort Worth	W. Ogle	313 Medical Arts Bldg., Dallas
Utah			S. Ballinger	1001 Tribune-Telegram Bldg., Salt Lake City
Vermont			J. A. Larrow	Middlebury
Virginia			J. E. John	804 Medical Arts Bldg., Roanoke
Washington	Jan. 29–31, 1948	Seattle	F. J. Dingler	1502 Medical & Dental Bldg., Seattle 1
West Virginia	July 5–7, 1948	White Sulphur Springs	C. J. Gavelda	Clarksburg
Wisconsin	March 30–April 1, 1948	Milwaukee	R. A. Mason	964 N. 27th St., Milwaukee
Wyoming			J. D. McNiff	208 Grand Ave., Laramie

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
California	Feb. 9, 1948 June 14, 1948 July 26, 1948	San Francisco Los Angeles San Francisco	K. I. Nesbitt	Room 203, 515 Van Ness Ave., San Francisco 2
Connecticut	Nov. 18–22	Hartford	C. G. Brooks	302 State St., New London
District of Columbia	Jan. 5, 1948	Washington	H. A. Swanson	1726 Eye St., N.W., Washington
Indiana	Nov. 3–6	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Iowa	Nov. 10–14	Iowa City	W. L. Bierring	State Department of Health, Des Moines 19
Kansas	Dec. 14–17	Kansas City	G. L. Teall	Box 71, Hiawatha
Minnesota	Jan. 5, 1948		E. E. Comartin	100 First Avenue Bldg., Rochester
Tennessee	Dec. 15–19	Memphis	J. J. Vaughn	1005 Medical Arts Bldg., Nashville 3
Texas	Nov. 16	Dallas	R. T. Weber	311 Capital National Bank Bldg., Austin
Wisconsin	Feb. 16–20, 1948	Milwaukee	S. F. Donovan	Tomah

OTHER MEETINGS

Name	Date	City	Secy. or Chm.	Address
American Academy of Dental Medicine, Luncheon and Round Table Discussion	Dec. 7	New York	W. M. Greenhut Secy.	124 E. 84th St., New York 28
American Association for the Advancement of Science, Subsection on Dentistry	Dec. 28	Chicago	I. Schour Secy.	808 S. Wood St., Chicago
American Board of Oral Surgery	Nov. 7–8*	Chicago	L. M. FitzGerald Secy.	718 Roshek Bldg., Dubuque, Iowa
American Dental Society of Europe	July 27–30, 1948	London	K. C. Campbell Secy.	88 Portland Place, London, W. 1.
National Board of Dental Examiners	Dec. 1–2†		G. L. Teall Secy.	Box 71, Hiawatha, Kan.
Denver Dental Association, Forty-First Annual Mid-Winter Meeting	Jan 11–14, 1948	Denver	K. F. Grove Chm.	1325 E. 16th Ave., Denver
Chicago Dental Society	Feb. 9–12, 1948	Chicago	A. L. Brett Secy.	30 N. Michigan Ave., Chicago 2
New England Dental Society	Nov. 5–6	Boston	J. F. Barton Secy.	43 Farmington Ave., Hartford 5, Conn.
Midcontinent Dental Congress, Seventh Annual Meeting	Dec. 1–3	St. Louis	V. H. Frederich Secy.	Arcade Bldg., St. Louis
Greater New York Dental Meeting	Dec. 8–12	New York	K. N. Donally Publicity Chm.	Room 106A, Hotel Pennsylvania, New York
Northeastern Society of Orthodontists	Nov. 10–11	New York	O. Jacobson Secy.	35 W. 81st St., New York

INTERNSHIPS, EXTERNSHIPS, RESIDENCIES AND FELLOWSHIPS

Boston City Hospital, Boston. Oral Surgeon-in-Chief, Stephen P. Mallett.
The Children's and Infants' Hospital (a Unit) of Boston. Address Paul K. Losch, 300 Longwood Ave., Boston.
The Children's Memorial Hospital, Chicago. Administrator, Mabel W. Binner, 707 Fullerton Ave., Chicago.
City Memorial Hospital, Winston-Salem, N. C. Superintendent, J. B. Whittington.
Columbia University, School of Dental and Oral Surgery. Associate Dean, Bion R. East, 630 W. 168th St., New York 32.
Delaware Hospital, Inc., Wilmington. Medical Director, Delaware Hospital, 501 W. Fourteenth St., Wilmington 13.
Eastman Dental Dispensary, Rochester, N. Y.
Fellowships for Research and Graduate Work in the Dental Sciences, University of Rochester. Dean, George H. Whipple.
The Forsyth Dental Infirmary for Children. Director, Percy R. Howe, 140 The Fenway, Boston.
International Grenfell Association. Staff Selection Committee, 156 Fifth Ave., New York.
Jewish Sanitarium and Hospital for Chronic Diseases. Director, Leonard Kohn, Dental Division, E. Forty-Ninth St. and Rutland Road, Brooklyn 3, N. Y.
Joseph Samuels Dental Clinic of the Rhode Island Hospital, Providence.

*Examinations for certification.
†Examinations will be held in schools where there are five or more candidates.

New York Foundling, New York. Medical Director, Alfred J. Vignec, 175 E. Sixty-Eighth St., New York.
Notre Dame Bay Memorial Hospital, Twillingate, Newfoundland. Address John M. Konopka, 25 W. Independence St., Shamokin, Pa.
Richmond Freeman Memorial Clinic for Infants and Children, Dallas, Texas. Executive Director, Dora B. Foster, 3617 Maple Ave., Dallas.
University of California, College of Dentistry, San Francisco. Dean W. C. Fleming, University of California, Medical Center, San Francisco.
University of Illinois, Graduate School. Fellowships for Research and Graduate Work. Secretary, Committee on Graduate Work in Medicine, Dentistry and Pharmacy, 1853 W. Polk St., Chicago 12.
University of Illinois, Research and Educational Hospital, Chicago. Supervisor of Hospital Dental Services, Maury Massler, University of Illinois, 808 S. Wood St., Chicago 12.
University of Oregon, Medical School and Hospitals, Portland. Administrator, Charles N. Holman, 3181 S.W. Marquam Hill Road, Portland.
Walter G. Zoller Memorial Dental Clinic, University of Chicago. Director, J. R. Blayney, 950 E. Fifty-Ninth St., Chicago 37.